UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF VIRGINIA
Alexandria Division

BMG RIGHTS MANAGEMENT (US) LLC, et al., Plaintiffs, vs. COX ENTERPRISES, INC., et al., Defendants.	Case No. 1:14-cv-1611

VOLUME 2 (A.M. portion)

TRIAL TRANSCRIPT

December 3, 2015

Before: Liam O'Grady, USDC Judge

And a Jury

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NOTE: The December 3, 2015 portion of the case begins in the absence of the jury as follows:

JURY OUT

THE COURT: All right. Good morning. I see everyone that's anyone is here, and we agreed to meet a little early. I appreciate the supplemental briefing. And it's Cox's objection. Mr. Buckley, do you want to be heard, sir?

MR. BUCKLEY: Thank you, Your Honor. Yes. We submitted a brief last night. I don't think that the issues have changed dramatically, and I think I've been making the same basic argument all along. If there is evidence of infringement, it's this data in this little part of the notice right here. The rest of this notice is statements by human beings, and fairly aggressive statements by human beings including under penalty of perjury, we own the copyrights, you're violating the law. Those are not the kinds of things that computers send.

THE COURT: Why is it different than the red light case?

MR. BUCKLEY: I'm glad they flagged it. When you're home and you get a letter from the police department that says, we got you on camera blowing the red light, you need to come to court. That is not evidence that you blew the red light.

When you show up in court, they're going to use the photo of you blowing the red light, and they're going to use

the notice as evidence of why you're in court. They're not going to say, here's the evidence that the judge blew the red light. They're going to show you -- they're going to show the photo.

This is the letter from the Police Department, but much worse because it's got all sorts of other stuff in it that is not computer generated. This is the reference to the camera.

They can certainly come in and put on evidence that their systems generate this kind of data and the data is reliable and it sits in tables, and -- but this kind of compilation of this evidence doesn't prove the data. That's what the hearsay rule says.

And that's exactly what 105 is supposed to deal with. When you've got evidence that's admissible for one purpose -- and we've all agreed that the notices -- some portion of the notices are going to come in, we're going to talk about what they say. All we want is for the jury to understand that doesn't mean that this is proof -- this document is prove of infringement. And I don't think there's any dispute about that either. I don't think they're saying they're going to use it for that purpose.

THE COURT: No.

MR. BUCKLEY: Thank you, Your Honor.

THE COURT: All right. Thank you, Mr. Buckley.

Do you want to respond?

MR. THEODORE: I think the critical question here, Your Honor, is of prejudice. Is it prejudice to them and prejudice to us?

So -- and I don't think there is prejudice to them. There is going to be tremendous argument on this issue, what do the notices mean, what's their significance, what do they prove. It's going to be a central issue in this case, and they're going to have every opportunity to put in evidence on it.

What they want I think here is for you, Your Honor, essentially to put your finger on the scale. The parties are going to have a debate as to what the Rightscorp data means, what the Rightscorp system means, what the Rightscorp data that is incorporated into these notices mean. And what they're asking you to do is to put your finger on the scale and say to the jury, essentially, the Rightscorp -- the Rightscorp data, the Rightscorp system as a whole into which these -- which these notices are a record, of which they're a part in effect is insufficient to prove infringement.

But that's something that they can extremely effectively argue to the jury. And it's extraordinarily prejudicial to us to have a jury instruction that essentially says these notices, which are computer-generated records of our system, of the system that is our essential proof in this case,

are unreliable.

And I think what's interesting on the prejudice point is that if you look back to their original paper, their original motion in limine, the prejudice that they identified was the volume of notices. It was stacking two million notices in front of the jury. But we're not proposing to do that. We're just going to put in a summary exhibit and one notice per work.

It's, in fact, they who are emphasizing the number of notices in this case. In their opening and in their cross of Hubert they made a huge issue of the number of notices that were sent.

So I think that it's a little bit unfair for them to make a huge issue of the great volume of notices and then come in and say that the volume of notices is so unfair that they're entitled to a limiting instruction that essentially says to the jury, here's how you should decide the case.

THE COURT: Okay. All right. Thank you.

Well, I'm going to admit the notices without a limiting instruction. I think they are entirely computer-generated notices. You know, the -- if you drill down the entire document, everything is generated by persons. You know, all the source code is generated by persons.

I think the law in the case, when you're looking at hearsay takes that aside and says, listen, is this document

computer generated. And regardless of whether a portion of it is generated by the software system for purposes of identifying infringement or for purposes of notifying the recipient that they -- you know, they believe that infringement has occurred and you can pay $20 and we'll give you a release. It's -- there's a combination here of the author, but the notice itself is computer generated and, therefore, not subject to the hearsay exception.

I think the red light case is a -- I think, Mr. Buckley, your argument is a little too narrow because in the notice that the person gets at home, there is a combination of, hey, show up in court if you want to contest this. Otherwise, pay $50, and it's not going to go -- you're not going to get points on your record, but, you know, we're going to go after you, and you either need to show up in court or pay it. None of that comes out of the computer system which takes the photograph.

So it's a combination, again, of the notice, one, generating the infringing act through its software system; and the second is the additional information that is put into the notice by a person, but ultimately all computer generated.

So your exception is noted. I think the record is pretty clear of Cox's position, but I'm not going to give a limiting instruction. I think the notices, as BMG has stated, are part of the hearsay burden that they face that they are --

you know, ultimately, they are on their face reliable. Whether, in fact, the jury finds that they are reliable and are persuasive will depend on the testimony of Rightscorp. So --

MR. BUCKLEY: Thank you, Your Honor. Can I ask for one point of clarification?

THE COURT: Yes, sir.

MR. BUCKLEY: So the notices are e-mails.

THE COURT: I'm sorry?

MR. BUCKLEY: The notices are e-mails.

THE COURT: Yes.

MR. BUCKLEY: And all e-mails are computer generated. So I'm wondering whether this is an issue that we're now going to be dealing with with other documents in this case that are no longer hearsay because they are generated by computers. And that's -- so I am assume you're going to say no, but I suspect that this issue is going to come up again, so I'd like to note it for the record.

THE COURT: Yeah, there's a real distinction there --

MR. BUCKLEY: Thank you, Your Honor.

THE COURT: -- Mr. Buckley. I think your -- your partner has been -- well, all right. Thank you. We'll deal with admissibility on a document-by-document basis.

I went through the deposition designations and objections last night. You know, I don't know how many judges are spending their evenings doing that every night during

trial. I kind of thought that when I left private practice, that meant I actually wouldn't spend my evenings between the courtroom days working.

And so I understand the -- what I call the machine gun approach to objections during the depositions themselves. I'm sure Mr. Bridges got out, you know, authentication, speculation, relevance, ambiguous. I'm sure that only took about a second-and-a-half in between the question and the answer each time, but that -- and I guess that's going to be played on the videos, or is it out? I mean, because I think the jury is going to get pretty tired of that if they're hearing it every time.

MR. BUCKLEY: Your Honor, I think the assumption is that objections -- for admissible questions, objections will be edited out.

THE COURT: Okay. All right. Good. I don't -- so I've made -- I don't know if you can understand it. O is overruled. S is sustained.

I overruled the vast majority of the objections that were made. And do we just -- did we just erase everybody's information on their computers? I hope not.

But let's be a little more careful in making the objections for purposes of the trial exhibits now. I think that they were over-objected to, and maybe using my example of the rulings I made last night will help guide you in the

future.

All right. Anything else before we get started?

MS. JOBSON: Yes, Your Honor, I just wanted a point of clarification.

THE COURT: Yeah, I made some written comments on there.

MS. JOBSON: Yes. I just want to make sure I understand on this first page of the document we received, on the second -- on the bottom half --

THE COURT: "Witness doesn't know what soft termination meant. Was another witness put up to answer this."

It's a -- you know, it was a 30(b)(6) witness, so that was part of my problem with the over-designation of objections. So was there another witness? Because this witness didn't answer any of the questions, just said, "I don't know." And I don't know what the relevance is for BMG's purpose of putting -- of designating that testimony if the witness said, "I don't know."

MS. JOBSON: I agree, Your Honor. I share the same confusion. I believe he doesn't know and, therefore, his testimony on that point is not helpful.

THE COURT: Was another witness put up?

MS. JOBSON: We don't have another -- there's not another 30(b)(6) witness that does know. They did ask questions of Mr. Sikes on that point.

THE COURT: Okay. As an individual?

MS. JOBSON: As an individual, correct.

THE COURT: All right. Let's go ahead and strike that from the --

MS. KAMMERUD: Your Honor, if I might be heard on that?

THE COURT: Please.

MS. KAMMERUD: Mr. Carothers was put up as Cox's 30(b)(6) witness on issues of their policies. And he throughout his deposition maintained that he did not know anything about those policies.

Mr. Sikes and Mr. Zabek were -- also had testified -- they had previously testified, I believe, and did have quite a bit of knowledge about those policies, and they were not designated as 30(b)(6) witnesses or as corporate designees either during -- before, during, or after their designations -- or their depositions.

THE COURT: All right. So my question is, why leave this in? Is there some -- is the failure to be able to answer the question relevant to BMG, you believe?

MS. KAMMERUD: Well, we have also designated testimony from Mr. Sikes regarding this soft termination policy. And that testimony, Mr. Sikes initially denies knowledge of it and then admits knowledge of this policy. So we believe --

THE COURT: Okay.

MS. KAMMERUD: -- that this sort of a pattern of denial and allegedly not knowing about this policy speaks to their willful blindness because based on Mr. Sikes' testimony, they were aware of the soft termination policy.

THE COURT: So you think Mr. Carothers was testifying incorrectly and that he actually was aware of the soft termination policy?

MS. KAMMERUD: I can't speak to his knowledge. I -- it's our position that Mr. Carothers was not prepared appropriately for his deposition as the corporate designee. And throughout that deposition maintained he didn't know about a lot of their policies that are key aspects of this case.

THE COURT: Well, the answer there is for BMG to say, put another witness up who is prepared to testify about this designated topic, right?

Mr. Caracappa.

MR. CARACAPPA: Yeah, Your Honor, I apologize. I'm not sure of the exact circumstances surrounding that. I don't recall whether we asked for another 30(b)(6) witness or asked for someone with knowledge on that topic. But I know that issue was discussed. And we did want to speak to the people who were consistently designated as being the most knowledgeable on that topic, Mr. Sikes and Mr. Zabek. And they refused to designate that testimony as testimony that was Cox

testimony.

So we think that's the issue, that we think they're going to have them come in now and change the Cox testimony.

THE COURT: Well, if they do, you will be able to explore that. But let's take 124 through 128 out of the designated testimony for now. And that brings up an important issue. Which is, there has been an objection by Cox to using these depositions at all because they are going to be live witnesses on behalf of Cox.

And I believe that BMG has the right to put its case on the way it wants to put its case on, and can put these in by deposition. However, you know, BMG has to make the decision whether it's going to put them in by deposition or wait and put it in through cross-examination. But the jury is not going to sit through a repeat of all of the questions asked in this deposition.

You know, I am not precluding you from getting into topics that may have been discussed, but we are not going to go -- it's not going to be an opportunity for BMG to delve back into every issue that was addressed in the deposition. So if I think you are doing that and the jury is hearing everything for a second time, then we'll talk about that because that's -- I am not going to permit that. Okay?

MR. CARACAPPA: Thank you, Your Honor.

THE COURT: All right. What else did I write that

you don't -- you must have clerked somewhere because you understand -- or if you have got partners that are still writing in handwriting, because you actually could decipher my --

MS. JOBSON: It's the latter, Your Honor. I won't name names.

THE COURT: So go ahead. You asked me a question.

MS. JOBSON: Yes. I have a couple of questions that pertain to some of the documents that are referenced in the testimony designated.

THE COURT: Okay.

MS. JOBSON: And in particular for a document they present, PX 1505, that the witness, Mr. Carothers, does not authenticate in his deposition. I would just ask that it not be authenticated at that time.

THE COURT: Okay.

MS. JOBSON: If they want to authenticate it in some other way, we can see if they are able to do that.

THE COURT: Okay. And BMG's response? I don't have the document obviously and don't know the reference, but if Mr. Carothers was shown a document and could not identify it or authenticate it, I don't see how it comes in in the deposition.

MS. JOBSON: I just wanted to clarify that point.

THE COURT: Yes.

MS. JOBSON: It is the Envisional -- Your Honor,

we're still working together to smooth out this process. I am confident we will be able to get this a little cleaner.

MS. KAMMERUD: Your Honor, we will consider this and get back with you if there is a continuing issue on the exhibit.

THE COURT: Okay. That's fine. Just obviously before it is played.

MS. JOBSON: And then one final point. I just wanted to echo Mr. Wakefield's comment yesterday regarding to the extent that some of this deposition testimony that is being offered as video goes to the DMCA question and the graduated response. We just ask that to the extent they play testimony in support of their position, that we are able to also present testimony in support of our position in rebutting their position.

THE COURT: In terms of how Cox treated other copyright owners' notices, is that --

MS. JOBSON: Yes, Your Honor, to the extent that that testimony is covered to support their point. We would like to offer just the rebutting testimony.

THE COURT: Yeah. Well, we will talk about that when it comes up. But I know -- I realize that's a continuing issue, and I still don't have my firm grasp on how I should rule on it. So we will continue to talk about it.

MS. JOBSON: Understood. Thank you, Your Honor.

THE COURT: All right. Thank you.

Joe, how is our jury?

THE BAILIFF: We have one juror missing.

THE COURT: Missing. Okay. Anything else?

MR. CARACAPPA: Yes. Yesterday --

THE COURT: Yes.

MR. CARACAPPA: It' John Caracappa, Your Honor.

THE COURT: Yes.

MR. CARACAPPA: Yesterday at sidebar we talked about Ms. Frederiksen's PowerPoint presentation. I think all those issues have been resolved; is that right?

MR. BUCKLEY: They have, Your Honor.

THE COURT: Terrific.

MR. CARACAPPA: Thank you.

THE COURT: Thank you. All right. We will take a brief recess and we'll come back when our jury is all here.

All right, we are in recess.

NOTE: At this point a recess is taken; at the conclusion of which the case continues in the absence of the jury as follow:

JURY OUT

THE COURT: All right. Ready for our jury?

Joe, let's get our jury.

NOTE: At this point the jury returns to the courtroom; whereupon the case continues as follows:

JURY IN

THE COURT: All right. Please be seated.

Good morning, ladies and gentlemen.

THE JURY: Good morning.

THE COURT: Did you heed my advice not to do any research or investigation or talk about the case? Can I have a nod of heads from everybody? All right. Thank you. As I said, it's vitally important.

All right. Let's continue with the direct examination of Ms. Frederiksen-Cross, please.

A JUROR: If I could just get her to talk into the microphone, it would be tremendous, I could hear it then.

THE COURT: Okay. You have a soft voice, so let's try and get a little closer to the microphone to make sure that everybody can hear you. All right?

THE WITNESS: Okay.

THE COURT: Thank you.

MR. CARACAPPA: Thank you, Your Honor. I have the witness binder here as well.

THE COURT: Yes.

BARBARA A. FREDERIKSEN-CROSS, a witness called by counsel for the plaintiff, having been previously sworn, continues to testify and state as follows:

DIRECT EXAMINATION

BY MR. CARACAPPA:

Q. Ms. Frederiksen-Cross, good morning.

A. Good morning.

Q. I would like to continue with your direct examination if that's okay.

A. Certainly.

Q. I would like to start from the very beginning. I use the Internet all the time and I'm not really sure how it works.

Can you explain that to the jury, please.

A. Certainly. And with the Court's permission, I have some slides that I think will help me as I go along just to make various points.

THE COURT: Sure. Go ahead.

Q. If you can turn to PDX 1 in your binder. And if you can just look briefly at those slides. And my question is going to be, do those slides accurately reflect your opinions and did you prepare them?

A. Yes, I did. I did the hand drawn drafts for these slides, and then I was aided by the trial graphics folks to make them pretty.

Q. Okay. Thank you. Okay. Could you please explain the

Internet to the jury, please.

A. Certainly. And I am just going to give you a high level view here touching on the terminology that I am going to use so that I can be sure we're all on the same page with that terminology.

So to start out with, the Internet is a collection of computers, a network of computers that are able to communicate with each other because they all are using the same protocol or an agreed-upon protocol for that communication.

And the way your home computer or any other device you use connects to the Internet is normally going to be through what is called an Internet service provider. So that might be somebody like Fios or your cable company or, in this instance, Cox.

And the role of the Internet service provider is really this pipe that you should be seeing on your slides there. That pipe serves as a conduit. And it's not really a physical pipe, but it's a metaphorical pipe in that that's the passageway your communication gets from your computer to the Internet. And that connection, that conduit, is provided by your Internet service provider.

So without such a conduit, with very few exceptions like certain government agencies that serve as their own ISP or ISPs themselves, you don't connect to the Internet without that service provider. They are the gateway you go through.

Q. And in this case, who is the Internet service provider?
A. Cox in this matter.
Q. And can you explain how Cox provides service to the Internet for its users.
A. Well, the -- one of the key services that is provided by the Internet service provider is the ability to connect to the Internet. So typically that's done by hardware that is installed at your home or business that allows your network or your computer to talk to Cox.

And in order to be able to send messages on the Internet -- just like you have to have an address to send a letter from one side of the country to somebody else, you have got to have your address and their address so communication can go back and forth by mail -- on the Internet, the computers on the Internet also have an address.

And that address, at least at the entry point to your residence or your business, is administered by your Internet service provider. So when you become a subscriber, when you go to get onto the Internet, they assign you an address.

Now, that address can change over time in most cases, unless you are paying for a fixed address. But they are the one who provides that address, and that address is what lets communication go back and forth between your computer and another computer on the network, along with the physical infrastructure and backbone that they provide, the wires and

routers and things.
Q. And just to be clear, that is called an IP address?
A. Yes. IP stands for Internet protocol, but we are going to call it IP just for short.
Q. Okay. So you talked to me earlier about how the Internet address is a little bit like a postcard. Could you explain that to the jury.
A. Well, it's like a postcard or a letter in that when you send a letter, you use a protocol. You may not think about it in those terms, but when you address the letter, there is a place on the envelope you put the sender's return address, there is a place on the envelope you put the recipient's address, there is a place on the envelope you put the postage, and inside the envelope you put the message. Or using the analogy of a postcard, on the back you put the message, and on the front you put that other data.

Well, communication on the Internet actually works a lot like that. There is -- if you look at the top box here in the bottom, you see that there is a source address. So in this case I've used a Cox IP address as the source. And you see in the box below that there is a destination address.

Now, the port number that I show there -- port numbers, some of them are assigned. Like there is special port numbers that say, this is an e-mail, or this is a request for a file transfer, or this is a request for a Web page. Other port

numbers are assignable to specific programs for specific purposes. That is to say, a program can assign it just for the purpose of a communication during a communication session.

So when used -- in this example we are going to send a request for a Web page out to the Web server. So the user's message with that content, with the source, the destination, and the identity of the Web page they are looking for, is going to go out to that Web server.

Now, a program on that Web server is going to receive that message -- or software on the Web server will receive it, and it will know from that destination port 80 that, oh, this is supposed to go to a Web server, this is a request for a Web page not a request for an e-mail server, or something like that.

And so, if you could click, we'll send that up to the Web server here. And in response, the computer that receives that communication, just like you would if you got a letter requesting a response, you take the sender's address, that becomes the destination address of your message. And you take the recipient's address, your address, and that becomes the sender's address. And then you send back the response that is requested.

Well, the same thing kind of happens with the Web page. It reverses those addresses so the sender becomes the receiver, the receiver becomes the sender, and it sends the

content that is requested back to your computer.

And on your computer software that sent that request then can receive the request and display your Web page or do whatever else was requested in the context of the particular communication.

Q. Thank you. Now, this is just a random sample IP address to use as an example. But how would one know who owned that IP address?

A. Well, IP addresses are assigned in blocks of numbers. You know, an IP address is this number: Number, number, dot, number, number, number, dot, number, number, number, dot, number, number, number. So it's those four little octets together.

There is an administration system within the Internet that assigns blocks of addresses to ISPs or entities entitled to distribute those addresses. And by going out to their look-up service -- like, for instance, I would use the American Registry of Internet Numbers, or ARIN, as it's called, I could go out and ask who is assigned to this block of addresses. And I would get back typically the ISP that is assigned.

So at that point I go, oh, okay, I know who that is. I know who the ISP is at least. I don't know who the person is, but I know who I can go to to ask, can you identify who is using this address at a particular date and time.

Q. And is that information publicly available?

A. The information to look up who an Internet address is assigned to, that is to say who the administering agency for that address is, is publicly available. Who they have assigned it to, no, or typically would not be.

Q. Who would know who they have assigned it to?

A. The administering --

MR. BUCKLEY: Objection, speculation.

THE COURT: Overruled.

A. The administering authority. So, for instance, if the address was assigned to Cox, you would go to Cox to see what subscriber was using that address at a particular date and time.

BY MR. CARACAPPA: (Continuing)

Q. And do those records linking the IP address to the particular subscriber have a name?

A. They are typically called DHCP leases. And it is called a lease because you're just using the IP address. And companies will typically have that information in a database. And because the addresses can move around amongst people, there is also going to be associated with a start time for the lease. And if the lease is subsequently removed, then often a termination time as well.

So you know that it was good on February 1 from 8:00 a.m. until March 31 at 10:00 p.m., but then it was no longer associated with that particular subscriber. It either

went back into the pool or it may have gotten assigned to somebody else, in which case you would look up the next record to see who had it.

Q. Ms. Frederiksen-Cross, on this page 3 that is on the screen you talk about the IP address, but you also have something called a port. Can you explain what a port is.

A. Yeah. As I mentioned, the port -- the IP address is sort of like the street address on an envelope. The port is sort of like the identity of the person you might send it to or, you know, accounting department, attention: accounting department, or, attention: vital records, or maybe just my name if you want the letter to go to me and not somebody else in my family.

So the port is an indicator of on the receiving computer who should receive and handle this communication. Who being a program there, like what program. Is it going to be handled by your Web browser or by your e-mail server.

Q. I would like to talk about the Internet in the context of downloading music. Can you explain how one downloads music over the Internet?

A. Well, there is a variety of ways. I mean, I'm guessing that probably a lot of you have used iTunes or maybe gone out to YouTube and viewed a video on the Internet that includes music.

THE COURT: Let's keep our voice up. Move a little closer.

THE WITNESS: Okay. Thank you.

BY MR. CARACAPPA: (Continuing)

Q. Ms. Frederiksen-Cross, can you move the mike closer to you?

A. I will see if I could do that, yeah. Okay.

So there are a number of ways. One is to go out to a server. And I think we have a -- we could use this slide even as an example of that.

Maybe I am sending a request to the iTunes server to buy a piece of music. So they get my credit card or they get my PayPal account and they send me back the piece of music that I have asked for.

Now, there are other ways as well, and some of them involve going to what is called file sharing systems or peer-to-peer networks. And this case involves one of those technologies. It is a peer-to-peer network called BitTorrent.

Q. And what is a peer-to-peer network?

A. Can we go to the next slide here?

In the slide we just looked at before this you had a computer, and it was talking to one computer to receive its content, a server. So my computer would talk to that server and the content would come back to me.

In a peer-to-peer network, you have a whole bunch of computers, and they can all be both requesters of information and senders of information. In that sense, they are peers.

One is not the server and the client, but they are all just on the same level in that they are sharing and requesting information from each other.

And so in this diagram, all the ones that look like laptops in the picture are peers. And I have numbered them Peer 1 through Peer 6. And so these are the computers that might be looking for content. They might already have content but still be looking for content. So maybe they have got half a song or half an album and they are collecting the other half of it while they are sharing what they already have.

Or they might be what is called seeds, and that is a computer that has all of the work, whether it is a single song or a single album or a movie or a collection of albums. And they are saying, like, I have all of it and I can give you any piece you want.

Q. How, if at all, is BitTorrent and peer-to-peer related?

A. Well, BitTorrent is an example of peer-to-peer. Peer-to-peer is a term that is used in the industry to talk about this concept of computers that are communicating with each other essentially as peers. So I might ask you for something, you might ask me for something, we are exchanging information.

Whereas -- and that's just a contrast to the other model that is commonly called client server where one computer is only asking and the other computer is only providing.

Q. I would like to ask you to explain BitTorrent to the jury. But before I do, I think there are some terms that you would like to discuss.

A. Yeah. I think it will be helpful to review some of the terminology before I go into the in-depth explanation just so it is familiar to you. I will try to revisit it periodically as we go along because there's a lot of jargon when you start talking about the Internet. So let me try to give you a preview of that so that you will be familiar with these terms and how I am using them today as we go along.

Q. All right. And let me start with the question, what is a torrent?

A. Well, a torrent -- and if you can pop it up so the jury can read it as I am talking here. A torrent is the concept of the different pieces of files that are being shared by a particular group of peers. And so the payload of the torrent, as it is called, makes up the content that those peers are actually exchanging with each other.

And so, you could have a group of computers all sharing files and maybe they are sharing files from one torrent or maybe the same group of computers could even be sharing multiple torrents that they all happen to have at the same time. But each torrent represents the communication with respect to a specific payload and the specific computers that are trading in that payload.

Q. Okay. What is a .torrent file?
A. Well, the way that you know or that the most common way that you know in BitTorrent what a particular payload is is because it's described in what is called a .torrent file. And I call it a .torrent file because it will be some name .torrent at the end. Just like a Microsoft Word document might be .doc or .docx. A torrent file used by bit file -- BitTorrent is typically .torrent at the end.

And that file describes information about what the payload for that particular torrent is. And it also provides information about how to contact what's called a tracker. And we'll get to tracker in just a sec here.

Q. And what is a SHA-1 hash value?
A. We usually pronounce that SHA-1. And SHA-1 is a digital fingerprint, that is to say it is a mathematically-derived fingerprint for a file that's created using a mathematical formula that was originally developed by the U.S. government for the specific purpose of identifying content and being able to authenticate content. So because the algorithm runs against the contents of a file and the output, the SHA-1 value is based on those contents, if anything changes in the file, you will get a different SHA-1.

And so it is really useful because you can use it when you are comparing two things to see if this file is the same as this file. You can use it as kind of a unique

reference to the contents of a file. So if you ask for a file using its SHA-1, you are asking for a very specific set of contents.

And then when you get that content, if your program runs the same algorithm and it is a standard algorithm, your computer SHA-1, and by comparing the two you can see if there were any changes, like an accidental error that happened during transmission. Maybe some bit of a file wasn't transmitted or someone could have tampered with the file. So they could say they are sending you a particular file, but if you check at SHA-1, you can go, that's not what I asked for.

So it's used in that sense for comparison and authentication.

Q. So if hypothetically I were to prepare a torrent payload and Mr. Warin was to prepare a torrent payload, what are the chances that the SHA-1 hash values of those two payloads would be the same?

A. Are you assuming that you have exactly the same content or different content?

Q. Could be the same.

A. If you had exactly the same content, the SHA-1 value would be the same. If you had different content, even by as much as a single character or a single note if we're talking about a musical composition, then it's going to be different.

Q. Can you describe for me what's at page 8, please.

A. Yes. This is just an example that was taken from one of Rightscorp's infringement reports. And as you can see on the first line, it says that this is going to show the title, the file name, that timestamp and hash value.

And then followed by that you see the actual data. The title was Young Girls. The file name was copy of 01-01BrunoMars-younggirls.MP3. The timestamp that this particular record was collected was March 5, 2013, at 4:57:20. And then the SHA-1 value that is highlighted at the bottom is just an example of that actual SHA-1 value, what it looks like.

So it is just a series of numbers and letters that get generated as a result of that mathematical algorithm.

Q. Ms. Frederiksen-Cross, what's a torrent payload?

A. I may have already mentioned this, but the torrent payload is the song or collection of songs or collection of files that make up the actual music or movie or whatever is being traded on that particular torrent. So that's what the user is really after. That's the payload that they are going for when they want to get a copy of what that torrent is trading.

Q. It's the stuff?

A. It's the stuff. It's the files, yeah.

Q. And what's a peer?

A. A peer, as I mentioned before, is any computer that is involved in this sharing. And for BitTorrent, that means that those computers are running a piece of software called a

BitTorrent client. I am just going to call it the BitTorrent software as we talk here just for shorthand.

The BitTorrent software is something that a user would download from the Internet and install on their computer or maybe get a copy from a friend and install on their computer. But it is software that normally you have to get -- you have to take an active action to get and to put on your computer.

And then that software is used to facilitate BitTorrent file sharing by -- or file copying -- obtaining the copies of materials or sharing the copies you have with others, because it helps you to locate -- using that torrent file, it helps you to locate a system, the tracker, that can tell you who is trading in that payload that you're interested in, and then give you information you need, their addresses, so that the software on your machine can start talking to the software on their machine.

Q. All right. Just a couple more definitions I would like to go over. What is a downloader?

A. A downloader is a term that is used for a peer that doesn't have the entire payload yet.

So in my little diagram here, I show the torrent payload, but I show it only half filled-in. This guy has got pieces 1 and 3, but not 2 and 4.

And so, as soon as you start acting on BitTorrent, as

soon as you open a BitTorrent -- or a .torrent file and go out to BitTorrent, your computer will begin downloading the pieces of the torrent you have asked for. But it doesn't get them all in a single piece. They come in in chunks. And as long as you have those chunks, you can be sharing any chunk you have got with somebody else. But if you don't have all of it, you are still called the downloader.

And then that's to contrast to what is called a seed. And a seed is just a downloader that has completed its collection of all the pieces, so now it has all the pieces available to anybody who asks as opposed to just some of the pieces.

Q. And a swarm?

A. The swarm is that group of peers that is trading in a particular payload.

Q. All right. One more definition, tracker.

A. Okay. Let's talk about the tracker for a second. The tracker is different than the server that we looked at in my very first slides, the client server. But in older BitTorrent clients and even most clients as used today, the tracker plays a key role because when you get a torrent file, one of the things that is in the torrent file is the address of the tracker for that torrent. And before you can start trading with peers, you have -- your software has to know their address.

And so, the way you find out who is currently trading in that payload for that torrent is your computer will go out to the tracker and receive back a list of who is trading in that payload. And then your software can start sending messages to those addresses in order to retrieve pieces of the payload. And the pieces all come in from different computers at once, typically. And the reason that BitTorrent is written that way is because it makes more efficient use of bandwidth.

If I was just going to go to one computer and get a big file, anybody else who wanted that file might have to wait in line until my download was completed. But if I am instead getting -- if instead there are 100 pieces of that file and I am getting them from 100 different computers, and you wanted to get a piece of that, you wanted to get that same payload, you could reach out to 100 different computers too. So the download goes much faster and it makes more level use of network bandwidth.

Q. Thank you, Ms. Frederiksen-Cross. All right. Now I would like you to explain how BitTorrent works.

A. Okay. Let's kind of walk through a BitTorrent interaction, if we could. So you have got the Internet out here and you have got your Internet service provider sitting out there. The peer who wishes to start trading or wishes to get a copy of a payload -- let's say that he doesn't have anything in the beginning but he wants to get something. He's

going to first go out to the Internet and find a torrent file for the payload he wants. And so he is going to send a request out to the Internet.

And you can do this via Google, by hand. You can go to special sites that list indexes of torrent files so that you can just click on them and download them. There is a couple different ways to search for that. But basically you, the user, are going to search for a torrent file and download it to your computer, and then you are going to add it to your BitTorrent session, essentially opening that torrent file in your session.

Q. And that's the .torrent file you talked about earlier?

A. That's the .torrent file, yes. So this is not the payload yet, it's just that describing file that is going to describe what the payload is. And, of course, you have searched for it by the song or movie or artist that you are interested in. That's how would you find it in the first place. And then you'd download it to your computer. You tell BitTorrent to use it.

And then what happens is once you have taken the action of basically telling BitTorrent, now I want to go get a copy of this, then the BitTorrent software begins that process necessary to collect the copy of the work.

Q. And how does it begin that process?

A. So the first thing that your BitTorrent software is going

to do is it's going to go out to the tracker that's identified in that .torrent file, just like I said, and it's going to find out from the tracker information about other peers that have -- that are participating in sharing this particular file or set of files.

Q. What are some of the popular trackers?

A. OpenBitTorrent, Public BitTorrent, I Stole It. There's a whole lot of them. And they -- they change all the time. I mean, you can also have private trackers. Like if I had created a movie and I wanted to share it with somebody, but I didn't want to share it with the world, I could either create a private tracker, or more likely just go to a private tracker that I subscribe to and post my torrent file there so that others could see my work.

I would have to put -- make a torrent file for my movie or my song or whatever I was publishing and then I would have to put it out there.

And the difference between a private and a public tracker is really just the private ones kind of require you to sign in. Some of them have a fee associated. But they -- they limit who can contact the tracker to authorized recipients. So the public ones are the ones that are most widely used for music sharing.

Q. Thank you. What happens next?

A. Well, the tracker sends back that information to the

requester. That is to say that it sends back the list of what peers are trading. And that list has their IP addresses.

And so now the software on the requester's computer on our Peer 1 up here can begin sending messages to those peers requesting pieces of the payload that they're interested in.

Q. So using the word I used before, the tracker tells me who has the stuff that I want, right?

A. Right, right. And the beginning of that communication, the first thing that happens when the requester's computer reaches out to one of the other peers is it does what's called a handshake. It is basically the peer is reaching out to another computer that's in that swarm and saying, gee, this is the payload I'm looking for.

And the other computer can either accept that handshake and basically say, yeah, okay, I got something you want, or it can reject the handshake and just hang up. And it would do that maybe if it was too busy to trade right now, or if it didn't have the requested payload, or if it had been configured not to share. You know, there's different reasons it might not accept your handshake and go forward.

But the peer that receives that handshake can respond. But if it does respond, if it does shake hands and say, okay, here's what we do, it passes back as a part of that handshake what's called a bitfield, and you're going to hear a lot about this bitfield. What it is is it's a string of ones

and zeros or maybe all ones, and each -- if you broke the song into 100 pieces, there would be 100 of these bits in the -- in the list, and it would have a 1 for the pieces it says it has and a 0 for the pieces that it doesn't have.

So if it had all the pieces, it would be all 1 -- or all 1s, each one would be a 1. If it had some part of that, it could be -- some of them could be 0.

Now, under some circumstances, and we'll talk about these later, that bitfield isn't always accurate. Sometimes it underreports what it has. And it's easy to kind of see why that could happen just in the course of BitTorrent working because computers are constantly downloading pieces. So it might be still downloading a piece that it basically has, but it hasn't verified yet, so it hasn't turned that bit on.

But also in order to evade interference with file detecting, some BitTorrent clients will underreport what they have. And that's -- we'll talk about that more, it's called lazy bitfield.

Q. Let's talk about the handshake for a minute. What type of computers will not enter into the handshake with someone who is trying to take my stuff?

A. Well, if I were to ask your computer, for instance, for a copy of a file, you might reject my handshake, my initiation of that communication because you were busy sharing with somebody else and the person who configured the software had said, don't

use over X percent of your capacity for BitTorrent traffic because I'm going to be doing something else am and I am just doing this in the background. So you might be too busy and not have the capacity to handle my request.

You might be configured not to share. That's called a leech. It's a person who only downloads copies of stuff, but they never share them.

And I guess I should mention here that BitTorrent is designed to encourage file sharing. And if you have files on your computer that you're sharing with other users, BitTorrent rewards you for that sharing by giving you incremental increases in bandwidth, so your subsequent requests will go faster if you share.

So if you don't share, you kind of are in the slow boat when it comes to downloading stuff. You can still download stuff with most sites, but you won't get the speedy download that a person who is sharing gets.

Q. What if -- what if my computer was on this and I did not have the BitTorrent software on my computer? Would I enter into a handshake with you?

A. Oh, no.

Q. Would you even ask me?

A. No, because if you weren't participating in some file sharing already, you would never be on that list the tracker gave me.

And the -- when new peers enter the swarm or as they collect additional content, they are periodically touching bases with the tracker to update their status. So if you're not there or your computer is off, you know, if your computer was turned off, it's not going to answer the handshake even if you had been sharing yesterday because obviously the computer is off.

Q. Okay. Thank you. All right. What happens after the handshake?

A. Then what would happen in the course of normal BitTorrent use is once the handshake is completed, there's a little exchange of information that let's the two programs recognize which specific protocol they're speaking. And then they begin to exchange files.

So in this instance, our Peer 1 requester is going to start receiving pieces from those other computers that are in the swarm, and as soon as it's verified each piece, it will also begin sharing those pieces with other computers that might be looking for it, other BitTorrent clients that might be looking for it.

One it's assembled all of the pieces for a particular -- or as it gets each piece, it verifies it using a SHA-1 value that's associated with the piece just to make sure the piece was transmitted properly, and then it puts it in its appropriate slot, if you will. So it's basically putting

Humpty Dumpty back together again as it collects the pieces.

Now, it doesn't have to have the whole work to start sharing. It can start sharing right away with the pieces it has. But once it has the entire work, then it can start sharing all pieces with anyone who requests.

Q. How does the peer verify and put the pieces in the proper order?

A. Well, there's an index or pointer associated with each piece that identifies where it is in that order. And that information -- and the information about what the SHA value for a particular piece at a particular location is is a part of the information that is provided in the .torrent file.

So when the system is putting things back together, it can verify them using the SHA-1 that was provided in the torrent file and it can also reorder them using that piece index that says this is Piece Number 4, Piece Number 3, Piece Number 5, Piece Number 1, whatever, until it fills in the whole work. And that also helps it in being able to check that it's complete with the work.

Q. We talked --

MR. BUCKLEY: Your Honor, I apologize. May I have a very brief sidebar.

THE COURT: Yes, sir.

NOTE: A side-bar discussion is had between the Court and counsel out of the hearing of the jury as follows:

AT SIDE BAR

MR. BUCKLEY: Your Honor, the copy of the slides we got or that I got didn't have all the animation in it. I understand that this background and it is fairly helpful, but this is feeling a lot more like closing argument than it is like testimony.

So it's fine for it to continue and I'm not suggesting the slides ought to be stricken, but I would like to suggest that as we go forward, if this is the sort of animation the experts are going to be allowed to use, that that is a two-way street.

MR. CARACAPPA: Yeah, I thought -- can you double-check to make sure that if you put it in animation it's not there, because I think we sent it over.

MR. BUCKLEY: It's possible. And, John, the one I had was a PDF, which that doesn't suggest that you didn't send this, I'm just saying I haven't seen the animation before today, and that might be my fault.

So again, this is actually really useful, and I don't want to cut it off, I just want to make sure that the leeway is going to be all-encompassing.

MR. CARACAPPA: We don't have any animation that fly the words "Cox" in and stamp it as infringer.

MR. BUCKLEY: I assume he took those all out.

MR. BRIDGES: He already took those out last night.

MR. CARACAPPA: Yeah. So what we have been doing --
THE COURT: They took them all out.
MR. CARACAPPA: I will make sure that the next time you get a document like this, you can play the animation. I think he did. But in the future, I will make sure.
THE COURT: And do you have some that are going to be animated with moving parts as well?
MR. BUCKLEY: We may now. And I don't mean to be glib about it. Yeah, it's possible there may be some. That's fine. I think it is helpful for these folks. I just want to make sure that I'm not going to later be part of an objection that no animation is appropriate.
THE COURT: Okay, duly noted.
MR. CARACAPPA: Okay. Thank you.
MR. BUCKLEY: I'm sorry to interrupt. Thank you.
NOTE: The side-bar discussion is concluded; whereupon the case continues before the jury as follows:
BEFORE THE JURY
THE COURT: All right. Let's keep that voice up now and get close to the microphone.
THE WITNESS: Okay. Get close to the microphone.
BY MR. CARACAPPA: (Continuing)
Q. Thank you, Ms. Frederiksen-Cross. We talked about how if I don't have the BitTorrent software, you won't even ask me to shake hands, right?

A. That's right.
Q. How does the tracker know who has and is willing to share the particular stuff or the torrent payload that I need?
A. Well, the role of the tracker is to keep track of who is participating in a particular torrent. So when you open a torrent file in your BitTorrent client, part of that first communication when you go out to the tracker using the URL that's in the torrent file -- or when your software does -- this happens just by running the software. When your software goes out to the tracker, the tracker also makes a note that you're now participating in that sharing.

And so, at that point in time the tracker adds you to the list of peers for that particular swarm. And so that's how the tracker knows who is in the swarm.
Q. Once I've downloaded that torrent payload and my computer is on, tell me the effect that has, if any, on who can take this particular stuff from me.
A. If you could advance, I think a got a little ahead of myself here, my next slide shows the communication between the tracker -- and we've already talked about that, so you could skip over that if you want.

But what happens then, once a particular payload is being traded on the BitTorrent, initially there may only be, you know, one file -- one computer offering it and then others begin to look for it because they see that torrent file when

they search for their -- .torrent file when they search for their -- the work that they're interested in.

And so, now the computer that had it begins to share it with others, and those computers begin to share it with others. And if it's a popular song, as more and more people search for it, more and more people will join that swarm trading it and more and more copies will be exchanged. So pretty soon that song is spread all over thousands of machines, hundreds of thousands even conceivably.

If it's really popular song, it's going to spread like wild fire because people hear it on the radio and they want it and they go out there and search for it. And so more and more peers are joining the swarm, more and more peers are sharing, and it just spreads.

And what that means is that now copies of this file are all over the Internet and they're being traded by anybody who has got the BitTorrent software, and it's really like no longer in the control of, say, the person who had the copyrights to say, I authorize this copying or I don't authorize this copying.

And it's also very, very difficult to stop because now there's a whole bunch of computers trading this file.

Q. So once you have it, you can share it with anyone?

A. Yeah. Well, anyone who is using BitTorrent if I have it in a torrent format.

Now, I want to be really clear here because I get asked this question a lot when I'm -- especially if I'm speaking to, like, high school or college age kids, having BitTorrent on your machine doesn't trade other songs that you might have on your machine, like it doesn't go out and raid your iTunes library and just start sending your iTunes stuff out of to the network.

Every file that's traded with BitTorrent has to have a corresponding .torrent file or every collection of files. It could be a whole album or even a collection of albums, but any payload has to have a .torrent file. And the way that it's trade is through that .torrent file.

Q. Thank you, Ms. Frederiksen-Cross. Now that we've talked about --

A. Actually, can I just clarify something I just said because I want to be absolutely accurate about this. There are some changes happening in BitTorrent and in file sharing that are redirecting that a little bit because it's recognized in the file sharing community that the torrent is like -- the torrent file is a vulnerability that could be used to interfere with trading. So there are versions of the BitTorrent clients that are being developed that don't need that. But most of them currently in use still support that torrent file and many of them rely on it entirely.

Q. How often do changes occur in the BitTorrent community?

MR. BUCKLEY: Objection, that requires speculation.

MR. CARACAPPA: I'll withdraw the question.

THE COURT: Yes.

BY MR. CARACAPPA: (Continuing)

Q. Now that we've gone over generally BitTorrent, I would like you to step through a practical example.

A. Okay. Let's pretend we're going to look for a song on the Internet and find its torrent and download it using the BitTorrent client. I'm going to actually show you some of the screens you might go through in that process.

So, first of all -- and if you could -- can you blow this up a little bit just to show the Google search? In this particular case, I'm searching for a song called American Honey by an artist called Lady Antebellum, and I put the word BitTorrent in there or I might put the word torrent to make sure that some of the first hits I get are going to be for torrent files.

And so if we can go to the next slide. When I get back -- my search results seemed to have disappeared somewhat. When I get back, here I would go to a site then and see a list. In this case I've gone out to a site that actually lists torrent files that are available for download. So I might have got there through my search or I may have -- I may have just known about this site and gone to it.

But here you see that that particular work -- if you

could scroll down just a tiny bit -- that Lady Antebellum's America Honey is actually available in a few different torrents because there's no rule that one work can only be traded by one torrent. You could have many torrents with the same work. So we're going to just pick one of these. And I think we'll go to that -- the torrent on the top named Lady Antebellum American Honey.

Q. So just to be clear, so at this stage you're trying to find who has that stuff?

A. Right. At this stage I'm just checking out what torrents are out. And this is an older song, so, you know, there may not be a lot of activity on it. But I still get several torrents when I run for a song. If it was a wildly popular new song, you know, that's only been out a week, there would probably be many more torrents that this little short list.

Q. After you find who has the stuff that you want, what happens next?

A. Well, then I want to go actually get the torrent file, because right now I know about the torrent file, but I don't have it on my computer yet. So I'm going to go to one of these sites and I'm going to download the torrent file.

And so, if we could go on then, I download that torrent file and it comes back to my machine. So now it's in my downloads folder on my machine.

Now, when I set up my BitTorrent client, I could have

put it somewhere else, like I could have created a folder called Torrents and put it there. But whatever my BitTorrent client is configured to show torrent files -- or, I'm sorry, wherever my computer is configured to store my downloads, that's where that download is going to be. And so I go out there now and what I want to do is I want to open that torrent file with my BitTorrent software.

So in the particular BitTorrent client I'm using here, which is -- it's called uTorrent or µTorrent. Actually the first character is the Greek character µ, but it's sometimes called uTorrent or µTorrent or even mytorrent depending who you're talking to, but that's the client I was running on this computer.

So when I go out, I see that Lady Antebellum torrent, I want to add that in my BitTorrent client. So over on the right-hand side here, you know, it's giving me a list of what torrents I have out there and I'm clicking one and saying this is the one I want. And then I open it.

So as soon as I do that, or as soon as I add it, which is effectively opening it, it starts coming down to my machine. So on this first screen you can see that it -- it's out there -- and if you can go onto the screen, we'll show you like the process, what I would see as I download that song.

So initially, if you could go to the --

Q. Next line?

A. Next one, yeah. So here, for instance -- can you zoom in again -- you see the name of that torrent is the one that I selected. And the status -- if you go over to where the blue bar is on that top line -- the status says it is downloading and it's about 20 percent complete.

And so, if you want to advance here then -- if you can go to the next slide. So now on this next slide, I think we have gone up to maybe 32 percent complete, and it's starting to give me some status about what I've got downloaded and what I've got available.

So if we continue on, then that status bar is just going to run across and pretty soon it's going to pop up. And if you can blow this one up, you'll see that now my status has changed to seeding because now I have all the parts and I am making all of those parts available to whoever else is looking for this song. And it shows that I have 100 percent of the pieces down below where it's showing that torrent.

So there you see that we've got the entire song collected now and we're sharing the entire song with anybody else who's using BitTorrent looking for that particular torrent payload.

Now, back when I had just pieces of it, I was sharing those pieces, but I wasn't a seeder yet because I didn't have all the pieces.

Q. So you used the word "download." What is a download and

how is it different, if at all, from an upload?
A. Well, of course, each one of those terms depends upon your point of view. If I am -- the way I use the term, if I am receiving the piece, I am downloading the piece. But if I were sending the piece, I would use the term "uploading." I am uploading it to you.

Now, obviously from your standpoint, that would be downloading it to you, because I'm uploading it, but you're downloading it. But they just mean which way the piece is going.

Q. Okay. So what happens next after you become a seeder?
A. Well, it's not so much after I became a seeder, but after I collect all the pieces, I put Humpty Dumpty back together again. I now have this MP3 file and I can click on it and run it if I want to listen to the music, or I could copy it to my phone to listen to on my phone or my iPad or whatever, because once it's complete, once the whole file is there, I can move it around and listen to it with whatever music software I want to use to listen to it.
Q. Thank you, Ms. Frederiksen-Cross. I'd like to talk now about the Rightscorp system.

Do you have an understanding as to how the Rightscorp system works?
A. Yes, I do.
Q. And how did you come to that understanding?

A. A combination of techniques. I reviewed the source code for the Rightscorp system.

I have also had the opportunity to interview Rightscorp technical personnel who were involved in the creation and day-to-day maintenance of that system. I have had the opportunity to examine data from that system and also data from some of the notices it generates. And then I have run some of my own tests by using BitTorrent on a computer that I had put some special software on that let me look at network traffic so I could see what my BitTorrent test was doing and then getting the corresponding data from Rightscorp to see what Rightscorp had captured about my activity.

So, I mean, I used all of those techniques to help me better understand the code and what it captured and what it provided. So the code itself, the data, the information provided by technicians and my own testing.

Q. Could you please describe for the jury your review of the source code.

A. Yes. Initially, I first received source code relating to the Rightscorp system in 2013. And at that point in time, I had been asked by the attorneys who were working with Rightscorp to help them understand how this code worked and to look at particularly the portions of the code that are aimed at detecting file sharing and collecting samples of shared works to vet the accuracy of the code and the soundness of the

approach being used, and then to explain the technology once I understood it to the lawyers who would be working with Rightscorp so that they could have that technical understanding.

Q. And then what happened?

A. During the course of 2013 I got several code drops to look at. The earliest, I think, was in the spring of 2013, April or May. Oh, no, I'm sorry. March or April, end of March or early April. And then the last one I got in 2013 was in, I believe, November of 2013.

Then some time went by, the case was dormant, you know, I had provided my explanation to counsel, had given them a little overview of how the code worked.

In 2015 then I was contacted, again by counsel for Rightscorp to say that they wanted me to take another look at the code. And at that point in time, I -- you know, I talked to the engineers again to kind of say, what's changed in the code and can you send me the code.

So over the course of early 2017, they began sending me the code.

Q. I'm sorry, did you say 2017?

A. I'm sorry. 2015. They began sending me the code, and I received the code in a couple of chunks at the beginning of 2015 up until about July of 2015. So it spanned a couple months as different parts of the system were made available for

my review.

During that same time, I also received some of the data samples from them again. I had received some early on just looking at them online, and now I was actually given copies on disk to look at.

Q. Do you recall the names of some of the files of the code that you looked at?

A. Well, the key components from the standpoint of looking back even to 2013, my original review, there was a component that the Rightscorp personnel referred to as Infringement Finder. And the code associated with that, the main program was a program called Test5.java, and then it used several other programs that it interacted with.

And it also used the BitTorrent API, that's the application programming interface to BitTorrent, and that's actually provided, you can you download it from SourceForge or BitTorrent.org, but it is freely available code for anyone who wants to write a BitTorrent client of their own or to study how it works. You can get the code for the BitTorrent client. So they also used that, and that was produced to me as well.

Q. Do you have an opinion regarding the accuracy of the Rightscorp system?

A. Yeah. There was -- do you want me to continue with some of the other components, or do you kind of want to go component by component?

Q. Let's continue with some of the other and then we go by component by component.
A. Okay. Because I hadn't quite finished that whole --
Q. That's fine.
A. Another really important component at the time of the system was a part that actually goes out and collects samples of -- collects copies of work from peers in the BitTorrent swarm. So you could direct the code via an entry in a table to go out and do some sampling for somebody that you thought might be copying or trading in a copied work. And that program was called SampleIt2.java. And, of course, it had some other pieces that it interacted with, but throughout our discussion, I'll probably refer to those as Test5.java and SampleIt2, if we can just use that terminology.
THE COURT: Let's listen to the question and answer the questions that you're asked instead of going off on your own. Okay?
THE WITNESS: Okay.
THE COURT: Thank you.
BY MR. CARACAPPA: (Continuing)
Q. Ms. Frederiksen-Cross, can you pull microphone a little closer? Is that even -- is that possible?
A. I think I can, yeah.
Q. Okay. Great. Thank you. My question is, do you have an opinion regarding the accuracy of the Rightscorp system?

A. Yes.
Q. What is that opinion?
A. With respect to the code that I reviewed and the data that I reviewed, it's my opinion that the system is by and large very accurate. And that it's effective with respect to the types of sampling that it does.
Q. Let's talk about the Rightscorp code or the system functionality. What's the first thing Rightscorp does when attempting to identify infringement?
A. Well, the very first thing is it starts with a list of the works that it's supposed to look for. So it doesn't look for every song ever known to man. Rightscorp gets a specific list of works from its clients that they want Rightscorp to look for.

And so, Rightscorp takes that list and it puts them in their database so that it can use that when it's searching for things or when it's matching things.
Q. What happens next?
A. The next thing then -- and we have some slides for this, if you want to advance to them and we can kind of have them visually as we go along. The next thing it does is it actually goes out to the Internet and it finds those torrent files that represent payloads that have the work that is a protected work for one of its clients.

And it downloads those torrent files back to the

Rightscorp system. So now Rightscorp has those torrent files in its possession and can use them to facilitate doing sampling.

Q. After it ingests and verifies the .torrent files, what happens next?

A. Well, we didn't really talk about the verification step yet so let me just touch on that before I answer that question.

Q. I apologize, yes.

A. With respect to the verification once it has the torrent files, there's always the possibility that some malicious person has created a torrent file with a name of a popular song or a work and put a virus in it or some other malicious code or that it's just got garbage in it even.

And so the next step once those torrent files are collected is Rightscorp uses technology to verify that the contents of that payload are the expected contents of the payload. So if it says it's a Lady Antebellum song, it actually -- Rightscorp actually verifies that it's a Lady Antebellum song. Or if it says it's a particular album, it verifies what songs are in that payload so it can identify them and know that they're not something bogus.

Q. After --

MR. BUCKLEY: I apologize, Your Honor. The testimony as to what Rightscorp does -- the testimony as to what Rightscorp does as opposed to the code, lack of foundation and

speculation.

THE COURT: All right. Sustained. Let's -- you know, she's testified that she got -- she talked to the technicians versus -- and also went through all the code and so differentiate where she's getting that information, if you would.

MR. CARACAPPA: I understand. Thank you, Your Honor.

BY MR. CARACAPPA: (Continuing)

Q. With respect to the ingestion and verification of the .torrent files, is your understanding of those files based on your review of the code or conversations with Rightscorp or both?

A. It's both. In the 2013 time frame, it was based -- the ingestion of torrents -- my understanding of that was based primarily on understanding with Rightscorp -- of discussions with Rightscorp personnel.

In 2015 I actually reviewed the code related to torrent ingestion and verification.

Q. After the torrents are ingested and verified, what does the Rightscorp system do next?

A. Once it has verified the torrents, if we can go on to the next visual I have after this one, go to the next slide if you would, please, the next step in the process is to take the verified torrents and to determine which of those -- which of the torrents that it's pulled in are -- contain Rightscorp

or -- works that Rightscorp has been protected to hire -- hired to protect. I'm sorry.

And so there's a process that goes through and checks against that list of protected works to create a list of the torrents that it's pulled in that actually have protected works in them, because they pull in more than they actually -- you know, they pull in some that don't have protected works so they want to make sure that they have that.

Q. And what is that understanding based on?

A. The code -- looking at the code -- for the current version of the code.

So what happens after that then is a process that goes out and uses that torrent information that's been ingested to actually reach out and do that handshake we talked about with peers who are offering to share these works. And I think I have a diagram of that on the next slide if you --

Q. Well, I think what I'd like to do is just list the steps first and then we can go into more detail about how the steps actually work.

A. Sure. So the step that is involved in looking for peers who are sharing the particular file is a program -- that's that Test5.java program I mentioned -- that goes out to those peers and -- or it goes out to the tracker for the torrent file that it's got. It gets the current list of peers trading in the particular payload, and so that payload could be a whole

collection of songs, some of which are protected works. So it goes out and it gets that payload.

And it reaches out to shake hands with each of those peers that's offering to share copies of that payload. And it gets back during that handshake the bitfield.

So if they answer the handshake -- if a peer that it tries to reach out to answers the handshake, a record ends up getting created that that peer says that it's going to share copies of a portion or all of that payload.

And up until -- I won't get ahead of myself here. The record is made that that peer is offering to share part of the payload. And so, that record records the date and time and the IP address and the port and the particular work, you know, the information that just records that incident. It also records that bitfield.

And at the time the record is created, a check is made to see if the bitfield shows that that peer is offering all of the pieces. And if it is, that little flag is set to a 1. And if there are some pieces missing, the flag is set to a 0.

So this just represents the results of that handshake with the peer to see if the peer is offering to share the file.

Q. And what is this understanding based on?

A. Looking at the code.

Q. And which portions of the code? Do you recall?

A. Well, the primary portion is Test5.java. At the beginning of the program, it uses another program just to pull the file out of the database, and it uses the BitTorrent API to actually interact with the tracker and get the torrent file and to parse that torrent file. And then it uses another program that it just calls with the record it's ready to save to stick it in a database.

Q. After Test5.java goes out and sees who is willing to share a certain work, what happens next?

A. Do you want the current processing?

Q. You could just --

A. Like where we are right now in 2015?

Q. If you could, just very high level and then we'll go into detail about what was done when.

A. Okay. That Test5.jave has created essentially one work that represents this is a payload. So the next thing that happens is a process is run to split that payload to reflect each individual protected work in the payload.

So the data record that said, I found someone trading this payload, is now expanded by a program called ExpanderToInfractions. And that program creates a record for each protected work that was in that payload. So we found one payload being traded, now we have a list of the works that were in that payload that we care about.

And then subsequent to that, that list can be used to

drive a couple different processes. One of them is that the list of works that were in the payload can be used to drive a process that creates notices e-mailed to Cox saying, you know, we have detected -- or that we'll show you the notice and the exact wording, but basically the notice says, we have detected this file sharing and we'd like you to pass this notice on to your clients. Or the expectation is that they will pass it on to their customers to alert them that the file sharing has been detected and that there is a copyright for that work. And it contains an offer to settle up for the copyright or to settle up for the copying of the song.

Q. And your understanding regarding the generation of the notices, what's that based upon?

A. Reviewing the code.

Q. After the notices are generated, what then does Rightscorp do?

A. Just to be clear, I've also spoken to the --

MR. BUCKLEY: Objection, foundation.

THE COURT: All right. Lay a foundation.

BY MR. CARACAPPA: (Continuing)

Q. Did you speak to anyone or did you review any documents that tell you what Rightscorp or Rightscorp's systems do after generating the notice?

A. Yes. I both looked at some of the code and I've also had conversations with the technicians at Rightscorp. And just to

be clear, I have also had conversations with the Rightscorp technicians about these various components that we've already spoken of as well.

Q. And based on that understanding, what does Rightscorp do after generating infringement notices?

A. After the notices are generated and mailed to Cox, a record is made that a particular notice was mailed on a particular day and a copy of that notice is stored in the databases.

Q. Okay.

A. Now, there's some other processing that can also take place --

THE COURT: Wait for the next question, please.

Q. Okay. Ms. Frederiksen-Cross, I'd like to focus on a particular period of Rightscorp. And I'd like to focus on from February 2, 2012, until November 26, 2014.

A. Okay.

Q. And I'd like to first talk about the ingestion of the protected works. And can you tell me how that worked during that time period? And I'm going to refer to that as the relevant time period from this point forward. Okay?

A. Okay. So from February 2 of 2012 to November 26 of 2014?

Q. Yes.

A. Okay. The ingestion happened originally manually. That is to say, Rightscorp's personnel have informed me that during

the early phases of the code they went out and did manual searches, like I showed you on the Internet, and pulled in the torrent files.

Q. I just want to take a step back. I want to start from a step before that. And I first want to talk about the ingestion of the protected works. So, for example --

A. Oh, I'm sorry.

Q. -- if BMG wants to use Rightscorp to protect its copyrights, what happens?

A. Initially -- again, in the early days the process was manual. And Rightscorp would receive a list of protected works and they would type or copy that into their database. At later points in time they would receive it in the form of a spreadsheet that they could either copy and paste or eventually just import directly into the database.

Q. And what happens after the work is ingested?

MR. BUCKLEY: Your Honor, foundation.

THE COURT: Well, he has laid the foundation for this part of the testimony.

MR. CARACAPPA: Thank you, Your Honor.

THE COURT: It's a combination of interviews and code and discussing it with technicians. If that's not the case, then you tell us. If you get it from other than what you have just testified to, then tell us where that source came from. All right.

THE WITNESS: Okay. And I will try to be clear with respect to different points in time when things were different.

THE COURT: All right.

THE WITNESS: You just asked when the work was ingested. Are you -- did you mean the work or did you mean the list of protected works, just to clarify?

BY MR. CARACAPPA: (Continuing)

Q. First we get the list of protected works from BMG, right?

A. Correct.

Q. We meaning Rightscorp, right?

A. Correct.

Q. And what happens next?

A. Okay. The next step in the process is that process that I talked about of going out and finding torrents that correspond to that list of protected works.

Q. Is that called the ingestion process?

A. Ingestion of torrents specifically, yeah.

Q. And can you explain that process with reference to the demonstrative, please.

A. Or ingestion of torrent files. Yeah, what happens here is once the list of torrent files is obtained, and that's in the old days searching for torrents that had the works, and in the new days currently they go out to a site called KickassTorrents and they download what's called a digest or a huge list of torrents that this particular indexing site knows about. But

they bring that list of torrents into their system as well, and then they retrieve the torrents. In the old days that was done manually. They actually go out and manually downloaded them.

In current processing, they use a program that goes out to the Web and -- based on the torrent name and the information that they have in the digest, and just downloads those torrents from the location that they are stored on the Web.

And once they are downloaded, they are put in a Rightscorp database. And that was true both in the old days and currently. Once the torrents were downloaded, they are put in a database. They are actually put in two databases. One of them has the copy of the torrent, the *.torrent file. The other has some of the directory of the contents of the *.torrent file broken out as separate records because now they can do copyright checking against those records and stuff. So the same content, but in two places.

Q. And what happens after the .torrent files are put in the Rightscorp database?

A. Well, in the old process where it was manually done they had already verified that those torrents had their payload. In the new process where they are downloading lots of them, there is an extra step that goes out and picks which torrents have protected payloads. So there is one extra step that is inserted in there to accommodate the automation.

And that information then is stored in another copy of the table so that they now have what is their working table for these torrents that they are going to be working with.

Q. Does Rightscorp ever compare the list of protected works to the ingested .torrent files?

A. Once -- to the ingested torrent file? Yes. That's -- well, they compare it -- not to the torrent file as a whole, but, as I said, when they bring that torrent file in, they also take the directory part of it that represents the different files that are in the torrent and they store that in a database where there is one record per payload content, if you will, one record per file in the payload. And so, they compare the copyright to that list.

Q. Is that what's shown here in demonstrative slide 45?

A. Yes.

Q. Okay. Thank you.

Okay. What happens next, Ms. Frederiksen-Cross?

A. Okay. The next thing, then, after the torrents have been ingested and the *.torrent files have been ingested and sorted out, the system actually goes out and collects a copy of the payload for those torrents so that it can check that payload and see if it's really what it is supposed to be. And we call that ingesting the torrent payload as opposed to ingesting the torrent file.

So the ingestion of the torrent payload is done

currently by a program called SampleIt3. Prior to that it was done manually. Again, they would go down -- in the early days, they would go out and just actually download the payload themselves using BitTorrent.

Q. So Rightscorp goes out to find out where the stuff is and gets the stuff, right?

A. Right. They get it and they save it in a database that represents the torrent payloads for the various torrents that they process.

Q. Can you describe the process of what happens after the torrent payload is ingested?

A. Well, the next step after the payload is ingested is, as I said, to verify that its contents are what you expect the contents to be. And in the old days that was done by a human listening to the songs in the payload or the ones that were relevant to the protected works and verifying that they were the songs that they were supposed to be.

Now they can use some automation for that, at least to make -- to process all of the records. That automation takes a form of two different programs. First they use a program called AcoustID, and that program works by creating a digital fingerprint. The exact method is proprietary. It uses a program that is provided by the AcoustID vendors.

They run a song through that program and it generates a fingerprint. And we don't really know if it is a SHA-1 or

exactly what kind of fingerprint that is because that's proprietary to that third party. But then that fingerprint is sent to the third-party's Web site and they look it up in a database and they come back -- they return information back about the song and artist that that particular -- that match that particular work. And it can be a list because, of course, the same song could be, for instance, on multiple albums. So they come back with a list of title and artist related to who that work could be.

Now, if that process doesn't for some reason return a result, like it comes back and it's still unknown, then they use Audible Magic. And Audible Magic is another kind of third-party software that is used in the industry -- in the music recording industry to identify musical works. And it is based on creating a fingerprint that uses as its source acoustical characteristics of the recording.

And again, it is kind of a proprietary thing. They don't really publish what acoustic characteristics they look at, but that fingerprint for Audible Magic is then generated and passed through the Audible Magic website where it's matched by Audible Magic against their website -- or against their databases, and then they pass back a similar list of what the song could be.

Q. After Rightscorp has verified the contents of the torrent payload, what does it do next?

A. Well, when it has got the identification back from either of those fingerprints, it updates the information in the database to reflect that it has been verified, that the song and title name are as provided by the third party. And it also sets a flag that indicates -- and a record in a database called torrent copyrights, I believe it is, that is used subsequently in processing to make sure that the songs that are verified are the songs that have been verified through one of these processes. Or in rare instances they may even today still use manual listening if it falls through the first two processes, and then a human would type in the title.

Q. What does Infringement Finder do?

A. The Infringement Finder or Test5.java program that I described earlier process verified songs. That is to say, songs that are in that torrent copyright database and also in the -- it pulls them out of -- it uses that torrent copyright to pull them out of the individual payloads, and goes out and contacts the tracker for that torrent payload. And then based on the information passed back from the tracker, goes to the individual peers and initiates that handshake we talked about.

And as a result of that handshake, it identifies peers that are offering to share copies of the file, and it makes a record of that offer to make the file available in its databases.

Q. Have you prepared a demonstrative to help further explain

how Infringement Finder works?
A. Yes.
Q. Can you explain it with respect to that demonstrative, please.
A. Yes. If you can pull up the next slide here.
So essentially the Rightscorp system first takes -- actually, there should be a first step here that somehow got omitted from the slide. The first thing it does is it goes out and gets that tracker information for the torrent that it has in its database that it knows has a protected payload in it or has a protected work in it as part of the payload. Then --
Q. We talked about that earlier. The tracker has to tell Rightscorp who has the stuff?
A. Right, has to give it the IP addresses.
Q. And once Rightscorp's system figures out who has the stuff, what happens next?
A. It starts looping through that list of IP addresses. And for each IP address, it goes out and does a handshake with that peer.
Q. So in this example, how many peers did the tracker identify as having the torrent payload or the stuff?
A. Well, five in addition -- I mean, there is our system that's reaching out there and then we have Peer 2, 3, 4, 5, and 6 in this example.
Q. Sorry. Continue. What happens next?

A. Okay. So once the handshake is made, you will see I have kind of popped up a little blank document here. That's my -- the best we could do to say it puts a record in the database to record that handshake.

Then it goes out to next peer in the list and attempts the handshake. And if the handshake is successful, it puts another record in the database to reflect that handshake.

If you can give me one more click.

And then it goes out to the next peer, does a handshake. And if the handshake is successful, it again creates that record with the bitfield and the full file flag, et cetera, and so on as it works its way through the list. Now --

Q. Okay. What happened to Peer 6?

A. Now, Peer 6 didn't answer the handshake. So no record was created for Peer 6.

Q. And what are some of the reasons why Peer 6 would not want to answer the shake?

A. Well again, Peer 6 may not have had the content. Peer 6 may have been busy. Peer 6 may have been configured not to share. Any one of a number of reasons.

Q. What happens after the Rightscorp system generates these records?

A. Once the initial records are generated, the record created by Test5.java is -- really represents the offer to share a

payload. So the next process really is to take that payload-related record and split it into a database that has a record for each protected song in that payload.

Q. Just to be clear, we talked earlier about notices. How, if at all, do records relate to notices during the relevant time period?

A. During the relevant time period from February to November 26 of 2014, the notices would be sent one per protected work out of that payload. And they would only be sent for payloads that had responded with the bitfield saying that that particular client had the entire payload available to share.

Q. Okay. So let's take a look at this animation that you have prepared.

A. Okay.

Q. Relating back to the earlier animation, there were four records generated; is that right?

A. That's correct.

Q. Because there were four handshakes?

A. Correct.

Q. And of the records generated during the relevant time period, how many notices were sent to Cox?

A. Well, there would have been a notice for each of the peers that responded -- there would have been at least one notice for each of the peers that responded with a full handshake.

Now, if that peer's payload had five songs, they might have received five notices on the -- for the particular day the handshake was made. And then, of course, during that time period the system might come back to them again. And if it came back on a different day and there were still five songs in the payload, it would generate another five notices, one for -- one notice per song per day per peer visited.

Q. In this example, how many notices were sent?

A. Well, in this example, which is just one specific run, it would send two notices. One for Peer Number 3 who responded that they had the whole payload, and one for Peer Number 5 who responded that they had the whole payload.

Q. And just so the jury understands, the whole payload or all the stuff is generated by the full green note; is that right?

A. Right. Right.

Q. And Peer 2 does not have all the payload, so it is half of a green note in this example, the same thing Peer 4; is that right?

A. Right. Now, in this example I want to point out that we're assuming the payload was a single song. So there would be one notice per song for each of these peers. If their payload happened to have five songs, there would be one notice per each of those songs because each one is a separate protected work on the list that was provided to Rightscorp.

Q. Why doesn't Rightscorp send the notice to the Cox

subscriber?
A. Well, Rightscorp can't because Rightscorp's sampling knows what the IP was. And the process that we're talking about that generates the sampling records, you know, the records that reflect an offer to make a work available, also goes out to a publicly available source and looks up who the ISP is. So they can get that far, but Rightscorp themselves has no way of telling who Cox's customers are.

So all they can tell is that the Internet service provider is Cox or Fios or, you know, whoever the provider is, and they can send the notices to that provider. But then the provider has to determine who the ultimate subscriber was who was using that address on that day and time.

Q. During the relevant time period, did Rightscorp send more than one notice per day?
A. It certainly -- I want to make sure I am answering your question the way you intended. Do you mean per song, or per client, or for everything in the whole world?
Q. That's a good question, and I will clarify. Did Rightscorp send more than one notice per day per copyrighted work per Cox subscriber?
A. I am aware of at least one occasion where there was a hiccup and it sent multiple notices on the same day. But generally speaking, both the code I have reviewed and the data I have reviewed say that the system worked as designed and sent

one notice per day per IP per song that it detected that was a protected song.

Q. Thank you, Ms. Frederiksen-Cross. I would like to talk for a minute about the Rightscorp notice.

Have you seen the Rightscorp notices?

A. I have seen them, yes.

Q. Are you familiar with the software that generates these notices?

A. Yes, I am.

Q. Have you spoken to Rightscorp employees about these notices?

A. Yes, I have.

Q. Okay. Up on the screen is PX 2839, which is Rightscorp 15015599-60.

Do you see that?

A. I do.

Q. And can you explain to the jury a little bit about the information contained in this notice.

MR. BUCKLEY: Your Honor, can I just preserve our prior objection?

THE COURT: Yes, sir.

THE WITNESS: Yeah, if we can blow up a couple parts of this, it will be a little easier to see.

THE COURT: How are you all doing? You ready for a break?

Mr. Caracappa, you're kind of moving into a new area, so I think maybe this is a good time to take a break.

Let's take our mid-morning break. We'll come back in 15 or 20 minutes.

All right, thank you. You're excused.

NOTE: At this point the jury leaves the courtroom; whereupon the case continues as follows:

JURY OUT

THE COURT: Okay. I think I responded, your objections are preserved.

MR. BUCKLEY: Yes.

THE COURT: Okay. All right. And let's take -- let's come back at five minutes after 11. All right?

MR. CARACAPPA: Thank you, Your Honor.

MR. BUCKLEY: Thank you, Your Honor.

THE COURT: Thank you. We're in recess.

NOTE: At this point a recess is taken; at the conclusion of which the case continues in the absence of the jury as follows:

JURY OUT

THE COURT: All right. Ready for our jury?

Joe, let's get our jury.

NOTE: At this point the jury returns to the courtroom; whereupon the case continues as follows:

JURY IN

THE COURT: All right. Please be seated. Let's continue, Mr. Caracappa.

MR. CARACAPPA: Thank you, Your Honor.

THE COURT: Let's keep our voice up and our -- and be close to that microphone.

MR. CARACAPPA: Thank you.

BY MR. CARACAPPA:

Q. Ms. Frederiksen-Cross, I just want to come go back and talk for two minutes about where we discussed the notices. Okay?

A. Yes.

Q. If I can have you look at the demonstrative you prepared, Number 53. During the relevant time period, would Rightscorp send a notice to Cox based on the record generated from Peer 2?

A. During the time period from February 2 to November 26, 2014, no.

Q. Why not?

A. Because during that time period the notice would only be sent if Cox's handshake had received a bit field that indicated that the particular peer was offering to trade all pieces of the payload. And since it had all pieces of the payload, obviously it would have all pieces of any particular song in that payload. So during that time frame the trading was focused on only peers, or the notices were focused only on those peers who had the entire payload.

Q. And in your example, which peers would that be?
A. In this example, that would be Peer Number 3, which has the entire payload, and Peer Number 5, which has the entire payload. The others only had part, so they would be left out.
Q. And that's because we see the entire note in green. Is that right?
A. Well, in my -- in my picture that's how I depicted it, yeah, the entire notice in green.
Q. Okay. Thank you.
A. Counsel, could I correct something I misstated in my earlier testimony?
Q. Yes, please.
A. I realized on the break that when I had named a particular program, I had given you the program with a similar name but the wrong name. I had said that the program that splits the record for the torrent into the individual files was expander to infractions, and the actual name of that program is torrent infractions expander. So I misspoke when I named it, but I would like to leave the record clear because we've got enough jargon here. No need to mess it up.
Q. Thank you, Ms. Frederiksen-Cross.
A. Thank you.
Q. I would like to pull up a right Rightscorp notice. Have you seen these notices before?
A. Yes, I have, sir.

Q. And have you reviewed the Rightscorp source code that generates these notices?
A. I have, yes.
Q. And do you recall the names of those files?
A. CEmail.java is the primary program -- that's a capital C and a capital E -- is the primary program that generates the notices. And then I think I mentioned this before, but just for the general format of the notice, there's a template and the template for Cox e-mails is called Cox.txt. So the data is merged into that template to create this file.
Q. Okay. Thank you.

Can you over, please, for the jury the type of information that's included in the notice?
A. Yeah. If we could, again, pop up some sections to make it easier to read. And as we go along, if you don't mind clicking on these.

It shows -- the notice says who the copyright owner is, who's sending this -- or on behalf of whom this complaint is being sent. It names the ISP to whom the notice is being sent. It names the work -- sorry -- date and timestamp that the notice -- or that the observation was made to which this notice relates.
Q. Can you explain the date and timestamp a bit?
A. Sure. Computers have an internal clock, and that clock keeps track of what day and time it is. This note happens to

be Greenwich Mean Time. That's what the GMT means on the end there. And the reason the notice contains the date and timestamp is partly to allow Cox or the ultimate recipient to know when this record was -- or when this event -- this observation was taken. But it's also important because if Cox wants to look up which subscriber was using a particular IP address, they generally will need the date and time to know who they had assigned it to, because then they can look in their DHCP database and see who was using that particular address on that date and time.

Q. Thank you.

And what other information does the notice contain?

A. It indicates the port. It identifies the specific work that was identified. So in this case, I think I've got it highlighted here, American Honey of the Lady Antebellum album. So it identifies what was being traded, who was trading it as far as Rightscorp can establish -- that's the IP address -- and the port number that it was being traded from. The date and time; who owns the rights; who the e-mail is being directed to, of course; and, you know, the basic information that's required for a notice, a DMCA-style notice.

MR. BUCKLEY: Objection, Your Honor. Legal conclusion.

THE COURT: Overruled.

BY MR. CARACAPPA:

Q. I'd like to just go over one other notice, and this is a notice that was generated on July 7, 2014. Does it contain generally the same information?
A. Yes, it's slightly reformatted, but it has generally the same information.
Q. And what information is that?
A. Again, we have, you know, who the ISP is, who the rights holder is. You see BMG Management. Yeah, thank you.

What the name of the file that was downloaded was, the IP address of the computer that downloaded it on a particular date and time. And then the port that was used with respect to that download.

Q. We talked a little bit about this yesterday.

Do you recall the number of notices that Rightscorp sent to Cox during the relevant time period for the asserted works?
A. About 1.8 million.
Q. Would Cox have had to have manually gone through all of those notices?

MR. BUCKLEY: Foundation.

THE COURT: Sustained.

MR. CARACAPPA: What was the objection? I'm sorry.

THE COURT: Foundation.

MR. CARACAPPA: I'll come back to this.

THE COURT: Okay.

BY MR. CARACAPPA:

Q. Was there any other information contained in the notice?

A. Well, I think it's important to note -- and I think we have a slide for this. Yeah.

At the bottom of the notice, at the end of the e-mail, there's some stuff that if you -- oh, I'm sorry. I've gotten ahead of myself again.

This particular slide shows the Dashboard link. And what the Dashboard is is a website that Rightscorp provides for ISPs, and each ISP is limited only to being able to view its own customers. But Rightscorp provides the ability for an ISP to go out and see some quantitative numbers, some summary numbers about how many notices were sent on what day and then they can click on that on a particular dates number and pull up a list of those notices. And then if they want to recall a copy of the e-mail, they can select a specific e-mail and pull that up for subsequent review.

So, for instance, if they had a customer on the phone, they could go find that complaint number in the system. And it also lets them just pull up a specific e-mail or to pull up other status information about, for instance, people that have been sent multiple notices.

Q. Would it be fair to say that this is a summary, this Dashboard that you're discussing?

A. Well, it's both summary and detail because it goes right

down to the individual notice level. You can pull up the actual e-mail that was sent to a -- or Cox can pull up a Cox customer, for instance, e-mail that they received. But it also has summary data, so it's both summary and detail.

Q. Does Rightscorp keep any records of the notices that it sends?

A. Yes, it makes an entry in its database. Every time it sends a notice it basically logs that it sent that notice.

And so what we have on the screen or what we just flew by was a sample of what that data looks like. It shows the date and the time and the work and the e-mail.

Q. Sorry. I used my clicker prematurely. Can you please describe the Rightscorp record?

A. Sure. The Rightscorp record includes basically the information that's in the notice. So it has the IP number and the song title and the artist and the song owner, you know, on whose behalf Rightscorp was sending the e-mail. It's got to the date, the port, the file name, the date that the notice was actually e-mailed. So the first date is the date that the observation occurred, and the second is the date that the -- that the e-mail notice was sent.

And then it's got the hash value, and it basically just preserves a record for every single e-mail that's sent so that Rightscorp can know what e-mails it sent and to whom and at what time.

Q. So we talked about the Rightscorp system and how it ingests the works from BMG, and that it ingests and verifies the torrents, and we talked about Infringement Finder and the notices.

What happens next?

A. Well, there's several other things that happen in the system. I mean, next is kind of on your point of view. But, for instance, one of the other things that happens is that periodically Rightscorp will use the -- these records that -- or the records that it created that a particular peer was offering a particular protected work, and it will randomly go out to that database and sample from some of those peers.it will go back to that peer and actually download the entire work this time.

So it's going out. It will select the record out of that collection of records for the peers its identified, and it will go out and it will do the handshake with the peer. But instead of stopping at the handshake, it will then go ahead and collect all the pieces.

And it collects them from a single peer, and I think that's an important distinction to make over the sampling we talked about earlier that was to download payload. This sampling is -- they use -- they've made a slight override to the normal BitTorrent API. So they're still using the BitTorrent code to go out to this peer, but now instead of

sampling from the swarm as a whole, it goes after that song from a specific peer and downloads that song and then it creates a record about -- again, about this download. And it saves the sample that it downloaded, the song itself, and it also saves information about that download activity.

Q. You talked earlier about how it downloads the file. Do you remember the name of the source code that performs that function?

A. The primary program is called SampleIt2, and that's with a capital S, a capital I, and the numeric 2.java.

Q. And do you recall the name of the code that downloads the sample of the work from the BitTorrent user?

A. I'm sorry. Maybe I -- can you ask that last question again? Maybe I misunderstood what you were asking.

Q. We talked about how early in the process Rightscorp goes out and gets the torrent.

A. Okay. I'm sorry. The program that downloads the torrent payload is SampleIt3.java. The program that goes to a specific peer and downloads a specific work is SampleIt2.java.

Q. And have you prepared a demonstrative to show the jury how SampleIt2 works?

A. Yes, I have.

Q. Okay.

THE COURT: Is this in existence of the relevant period? Is that correct?

MR. CARACAPPA: Ms. Frederiksen-Cross -- you can ask the witness or I can ask it.

THE COURT: Yeah, go ahead. You ask her.

MR. CARACAPPA: Okay.

BY MR. CARACAPPA:

Q. Ms. Frederiksen-Cross, when did Rightscorp use SampleIt2?

A. The first version of the program I received was in early 2013 -- or 20 -- yeah, 2013. It's my understanding that they actually used SampleIt2 from the beginning of their sampling for the entire relevant time period.

Q. I'm sorry. We're in SampleIt2 now. Right?

A. Yes.

Q. SampleIt2 is what downloads the sample works?

A. Oh, I'm sorry. SampleIt2 was started in -- I want to say about February of 2014, I believe, through the November time frame that's at issue here. I mean -- or actually through I think August, end of August of the time frame that's at issue here. So it's a subset of the total time period we've been talking about.

Q. And this just summarizes what we discussed, that SampleIt2 was used from February 1 -- February 1, 2014, to August 28, 2014?

A. Correct.

Q. All right. Can you step through this demonstrative to explain to the jury how SampleIt2 worked during that time

period?
A. Yeah. What the software does is it -- as I mentioned, it starts by going out to the record of -- that it's already identified with respect to who is sharing a particular payload. So it starts with, I've already identified this person via the handshake process we talked about earlier. So now it randomly samples from that database of recorded handshakes to go out to the specific peer -- it goes back to the same one, to collect specifically the protected work that was --
Q. The entire payload from a single peer. Is that right?
A. The -- the payload that's related to the protected works from the single peer is what it's focused on because it only stores those payload samples that are -- correspond to protected works.
Q. So in this example, Rightscorp's going to a Cox subscriber and getting the entire payload from a single subscriber. Is that right?
MR. BUCKLEY: Leading.
THE COURT: Overruled because she's already testified to it a few moments ago, but let's try not to lead.
MR. CARACAPPA: I understand, Your Honor. Thank you.
THE WITNESS: Just to be clear, the purpose of SampleIt2 is to sample for protected works, so when it goes to that subscriber the only record that it's making at this point is with respect to the protected works that it copies back. It

doesn't -- it doesn't make a record for the payload as a whole, but just for the protected works that it obtains from that peer.

BY MR. CARACAPPA:

Q. Compare for me how SampleIt2 works, how BitTorrent works generally. What is the differences?

A. Well, the primary difference is that if you're just a BitTorrent user, you're going to be going out to the swarm and you're going to get pieces from all over the swarm as you collect that payload. And in contrast, SampleIt2 has been directed to get its entire copy of a song from a single peer.

So instead of collecting it from the swarm generally, it goes to a peer and it says, give me this piece, this piece, this piece, this piece, this piece until it's reconstructed the song, and then it saves that song in a sample database and it saves a record of when it went to that peer and got that sample. And then it goes on to the next peer in its list, you know, that has a protected work or protected works -- it could be more than one -- and it goes out to that peer and gets its samples.

Q. And one of the songs that was made available for upload and that Rightscorp obtained from a Cox subscriber is Lady Antebellum. Correct?

A. Yeah, the one we've been using in our examples here specifically.

MR. CARACAPPA: Your Honor, can we play this song for five seconds just to show the jury the audio?

THE COURT: Yes.

(PLAYING AUDIO.)

MR. CARACAPPA: BitTorrent, and she said yes.

THE WITNESS: And I said yes.

MR. BUCKLEY: Foundation.

THE COURT: Overruled.

Go ahead.

BY MR. CARACAPPA:

Q. Talked about the notices that Rightscorp sends to Cox.

Are there additional ways that Rightscorp notifies Cox of the infringement on its network?

A. Yes. When the Rightscorp system detects that someone is sharing a copy of a file that Rightscorp has been hired to monitor, they send these notices out that we've already discussed. But also on an approximately weekly basis they send another e-mail to the ISPs, in this case Cox, that says that they have observed that there are repeat infringers. That is to say they look at the folks for whom they have collected multiple of these handshakes over a period of time and they identify for Cox or for the ISP that receives this e-mail how many such infringers there were in a particular time frame. And these are just the repeat infringers where repeat infringer is defined as someone who has received multiple notices during

that time frame for multiple works.

And they also -- in addition to just sending an e-mail with the summary counts, they attach then a file to that e-mail, a computer-readable file like an Excel spreadsheet, that just had -- or it's readable with Excel -- that just has the detail for each of these infringers. So it would have -- if this -- in this particular one it says, you know, there were 13,145 repeat infringers during this period of time, then the attached file would have the details corresponding to those infringers.

MR. CARACAPPA: Your Honor, one housekeeping matter. I would like to move in PX 2839, which contains the two notices that Ms. Frederiksen-Cross discussed.

THE COURT: You want to move them into evidence now?

MR. CARACAPPA: Yes, please.

THE COURT: Any objection?

MR. BUCKLEY: Same objections as before, Your Honor.

THE COURT: All right. They'll be received. Your exception is noted.

MR. CARACAPPA: Thank you, Your Honor.

BY MR. CARACAPPA:

Q. I also forgot to ask you a question, Ms. Frederiksen-Cross. The full file downloads, do you know approximately how many full file downloads Rightscorp has?

A. By full file download, you mean that -- those downloaded

samples we were talking about that are collected by SampleIt2?
Q. Yes.
A. And are you talking about just how many they have for BMG or how many they have for everything?
Q. Two questions.
How many do they have generally?
A. The -- the sample that I have seen had about 700,000 files generally.
Q. And how many have they downloaded from the Cox network that relate to the works at issue?
A. For the time period that we're talking about here at issue and for the works that are currently at issue, about 700,000 approximately.
Q. So I think that that's --
A. Oh, I'm sorry. That's the total group.
For just BMG it would be about 150,000.
Q. Thank you.
We talked about the termination request. Let's talk about the repeat infringement records that Rightscorp keeps. What are repeat infringement records?
MR. BUCKLEY: Objection. Calls for legal opinion.
THE COURT: I'm sorry?
MR. BUCKLEY: Calls for a legal opinion.
THE COURT: Rephrase the question. And, you know, let's be careful about how you ask the questions.

Infringement is one of the issues that you'll resolve on the basis of the testimony and the facts in the law that I give you, so, you know using the term infringement here is in reference to the notices and the works that we're -- you know, all of us keep in mind that we're not going to -- you'll be making the ultimate decision. So when we're using the word infringement now, it's based on the notices and the contents in the notices.

All right. Go ahead.

MR. CARACAPPA: Thank you, Your Honor.

BY MR. CARACAPPA:

Q. Let's look at an example of a Rightscorp record. Okay?

A. Okay.

Q. And we have one up on the screen at Exhibit PX 1, page 69. Could you please explain this exhibit to the jury?

A. Sure. This is one of those records that might be associated, for instance, with the termination request or the termination notice, the second kind of notice that gets e-mailed to Cox. And what this shows is some summary data related to particular infringers who during that handshake -- or I'm sorry -- particular folks sharing the file copies who during that handshake process were identified to have -- over a period of time, you know, when the system went back to them on the next day and did the handshake, they still had the same content, so they still had the same payload and the same

protected works were being offered for sharing.

And so this report summarizes in the first column how many times a particular IP address and port was observed to have a copy of that work available. And then it shows the IP address in the port, the date that it was first detected to have that content, and the most recent date that it was detected to have that content, the number of days that was in that span that the particular IP address import were sampled and then the -- whether or not Rightscorp had received any response related to the e-mails it had sent to Cox, and then the torrent name and a sample file name from that torrent name.

Q. The column on the left you said "available," and I just want to make sure we're clear. When you used the word available, that means made available for upload or download. Is that right?

A. Right. It means that when the Rightscorp system went out and did a handshake with that peer, that peer answered the handshake and provided a bit field that identified that the work -- that the payload in its entirety was available.

Q. Under torrent name, the first torrent name is Otis Redding Discography. I think that may be spelled wrong. Right? But what is a discography?

A. A discography is essentially a collection of the lifeworks of a particular performer, so it would be all of the songs they had recorded or all of the albums they had produced. Or if

they had albums and singles, it would be all the albums and all the singles.

Q. So here, this Cox subscriber is making available the entire Otis Redding discography. Correct?

A. That is correct based on the name shown here, yes. And normally those are not -- I mean, the BitTorrent people who put stuff up tend to label things so that others can find what they're looking for, so.

Q. I'd like to talk a little bit about the Dashboard. I'd like to talk for a minute about the Dashboard.

Did you review the code surrounding the generation of the Dashboard?

A. The code used to actually select the data and to present the screens to users, yes.

Q. Okay. And can you step through the Dashboard, please, for the jury?

A. Yeah, what -- oh.

MR. BUCKLEY: Relevance.

THE COURT: Overruled.

THE WITNESS: And just as a reminder, the Dashboard is an online site that Rightscorp makes available to ISPs so that ISPs can go out and look at information about their own subscribers but not somebody else's subscribers.

And so the main menu for the Dashboard has the four items that we see here. I've highlighted the first one.

There's a count of e-mailed notices. There's a list of those folks who would have fallen onto a termination list or termination request, the ones who had multiple observations.

So if we look at that -- the first option, for instance, you would see here -- and this is arranged according to each day of the month. So it's going to show the total number of notices that were sent on a particular date. In this case, I've highlighted the one for -- I think it's 2014/9/09, or I'm sorry. 2014/9/11 was the date.

And so when you click on that link, the -- in blue there on the number, then it pulls up the underlying detail. So this is -- and it pulls them up a hundred at a time so you can scroll through them so you can see a little bit more detail about, you know, what the case number was, what the track name, what the payload name was, the date, the IP, the port, et cetera. And there's a little box you'll notice at the front of these that if you click that, then you can actually pull up the notice that was sent in association with this observation.

BY MR. CARACAPPA:

Q. Okay. And just so that I am clear, we're stepping through the four bullet points on the Dashboard. Right?

A. Yeah, we're going to walk through what those represent.

Q. And we just did the first bullet point, and now we're on the second bullet point. Right?

A. Right. Right.

Q. And what happens when one clicks on the list of e-mails, multiple infringers for your ISP?
A. Well, again, it first provides a screen with some summary data. In this case, a particular IP address in port and then the date of the first observation, the date of the most recent observation, the number of days between the count of notices that were -- or the count of handshakes -- of notices actually -- that were sent during that time frame. So these are just the ones that notices were sent for.

And, again, the number of days that was in that time frame, so you don't have to do the math. And then again, there's a link that you could go to to pull up more detail about that particular IP address and ports so you could then see the underlying detail behind those summary numbers.
Q. And then bullet point 3 says, "Infringers for your ISP that have paid their bill." Do you see that?
A. I do.
Q. And what is that?
A. If you pull up that screen, it would show you whether any of the individuals on the first or second screens had actually contacted Rightscorp in response the settlement offer and paid that settlement offer to conclude, you know, the -- or to -- I guess to respond to the settlement offer by paying the $10 or 20 or whatever it was at that particular point in time.
Q. And the last bullet point says, "Retrieve e-mails sent to

you from our database." What's that entry?
A. And that one just let's the Cox or another ISP -- each e-mail has a case number on it. And if they were to type that case number into the screen that pops up, they can pull up a copy of the e-mail.
So, for instance, if a customer said, hey, I got this e-mail and it's number blah, blah, blah, they could type that number in and actually be looking at the e-mail at the same time when they're talking to the subscriber.
Q. Ms. Frederickson-Cross, who is Mr. Rucinski?
A. Mr. Rucinski is an expert like myself who was hired by Cox to perform analysis and provide his opinions in this case.
Q. And Mr. Rucinski presented a report in this case. Is that right?
A. That is correct, yes.
Q. And in that report, he had some comments to some of the statements you made and the observations reflected in your report. Is that right?
A. That is correct.
Q. First one I'd like to talk about is the SampeIt2 versus SampleIt3. And we talked a little bit about this earlier, but Mr. Rucinski criticized your use of those terms. Is that right?
A. He did in a couple of places in his report, yes.
Q. Okay. Could you explain that criticism?

A. Actually, the -- his first criticism was that there was a paragraph where I had omitted the number on the end and just referred to it generally as the SampleIt process, which is what Rightscorp typically refers to both of their sampling processes as unless they need to be talking about specifically the download of torrent payload or the download of a particular song.

And, you know, he's right. I had a place in my report where I was unclear which process I was talking about, and he called me out on that. And I agree. You know, I should have been more clear on that paragraph.

MR. BUCKLEY: Your Honor, this whole line assumes facts and testimony that's not in evidence.

THE COURT: Well, approach the bench. Sidebar, please. All right. Excuse us.

(ON-THE-RECORD BENCH CONFERENCE, TO WIT:

THE COURT: Well, it's not in evidence. And the issue is, do we want to deal with it now versus coming back on rebuttal testimony? I mean, you've got to make a choice. You can do it either way, but, you know, the goose and the gander. And, you know, if she testifies about this now, then I don't expect you to call her for rebuttal when he criticizes the testimony she's given. So you can have it one way or the other, but you're not going to repeat it in a rebuttal testimony and what she's about to testify now.

MR. CARACAPPA: I -- if -- that's okay as long as -- if Mr. Rucinski criticizes her for other reasons, she can be brought in rebuttal to address those other reasons. And part of the reason we're doing this now is because we'd expect Cox is going to bring it out on cross. We went over this with Frederiksen. She's identified some errors, and we would like to explain that.

THE COURT: Okay. And I think that's permissible versus doing it on redirect. If you expect that you want to get it out, then you have a right to get it out.

So where are we?

MR. BUCKLEY: Your Honor, you granted the relief I was going to request. As long as they're also not going to bring it back on rebuttal to testify to the --

THE COURT: Same case. Okay.

All right. That will be the rule of the case.

MR. CARACAPPA: Thank you, Your Honor.

MR. BUCKLEY: Thank you, Your Honor.

THE COURT: All right. Thank you-all.

(END OF BENCH CONFERENCE.)

THE COURT: All right. Let's continue, please.

BY MR. CARACAPPA:

Q. So we were talking about some of Mr. Rucinski or Cox's witness or expert who had some comments to your report. Right? We talked about SampleIt2 versus SampleIt3.

A. Yeah, I don't think we quite finished that discussion, but --
Q. Okay.
MR. CARACAPPA: Is it possible --
THE COURT: Well, what -- go ahead. Ask your next question.
MR. CARACAPPA: Is it possible for me to have the original question read back before the objection?
THE REPORTER: I will try.
MR. CARACAPPA: Okay.
And you know what, I don't think I need it if I -- could I just --
THE COURT: Yeah, re-ask it -- re-ask your question.
MR. CARACAPPA: Thank you, Your Honor.
BY MR. CARACAPPA:
Q. One of the criticisms Mr. Rucinski had was your use of the term SampleIt2 versus SampleIt3. Is that right?
A. Right. There was a paragraph where I had inadvertently switched the 2 and the 3. And again, he quite rightly took me to task for that, and I think I clarified that in a subsequent declaration. But just to be clear, the --
Q. Speak up and into the mike.
A. Yeah. Just to be clear, the SampleIt3 is the program that downloads the entire payload in order to use for verification, while the SampleIt2 downloads specific samples from a peer

that's already identified as a sharer of the file and preserves a record of that sharing by downloading the file.

Q. And this is a little counterintuitive, but SampleIt3 actually occurs before SampleIt2. Right?

A. In the process that its run, yes.

Q. Mr. Rucinski also talks about the ratio for SampleIt2 that you discussed in your report. Do you recall that criticism?

A. I do, yes.

Q. And what was that criticism?

A. In my report, I had noted that the ratio of the sampling of songs from identified sharers was -- or had said that there was a ratio because they didn't sample every song, but rather -- or every identified offer to make available, but they only just do random sampling for performance reasons. And I had referred to that as a ratio that's controlled by how frequently the sampling program runs and what it's directed to sample.

And one of Rightscorp's witnesses when asked about the sampling ratio said he didn't understand what that was about. But I had originally discussed this with the witness and, you know, went back to my notes and said, yeah, there's a sampling ratio.

Well, subsequent to that, you know, I've talked to the witness again and he has said to me, oh, I see what you were saying now because, yeah, we're not sampling every one, so

there's going to be some ratio, if you will, some relationship or ration between the total number that we sample for the handshake and the total number we download.

So my understanding is that that was an issue that was cleared up subsequently, and that really it was a misunderstanding of terminology as opposed to any clear distinction in the operation of the code.

MR. CARACAPPA: Paul, can you pull up the opening slide, number 44, that was used in Cox's opening statement.

BY MR. CARACAPPA:

Q. The heading says, "Rightscorp sends notices after detecting only 10 percent of a torrent." Do you see that?

A. I see that.

Q. For the relevant time period, is that slide true?

A. No, it is not.

Q. How do you know?

A. Can I explain what the 10 percent issue is about to the jury just so they --

THE COURT: Well, you listen to the questions and answer the questions --

THE WITNESS: Okay.

THE COURT: -- and then he -- Mr. Caracappa will follow up if he believes it's appropriate.

THE WITNESS: Okay.

I know that based on my examination of the code and

my discussion with Rightscorp's personnel about when certain changes were made to the code.

BY MR. CARACAPPA:

Q. Thank you.

And what does this mean, 10 percent of a torrent?

A. I believe that they're referring here to the fact that at one point in time in December of 2014, after the time period at interest here, Rightscorp had, in response to some changes that were going on in the file sharing world, made a change to its software to make it more sensitive to detecting sharing. Because at that point in time the handshake, some clients were underreporting the number of pieces they had in the handshake so that bit field would show less than the totality even when they had the totality.

And so in order to record notices or to create notices for potential under-reporters, if you will, Rightscorp changed the sensitivity by writing a little program that went through and looked at that bit field, that I mentioned was saved as a part of the record. And they said, if there were more than 30 parts and the peer was offering more than 10 percent of those parts, then change that flag that controls whether or not that peer is eligible for a notice, to reflect that they are eligible.

So before that change, they were only eligible if they said they had the entire payload. After that change, if

they said they had at least 10 percent of the payload, it was switched to eligible.

Q. And do you know approximately when that change was made?

A. The first week of December in 2014. December 2nd is the date that sticks in mind.

Q. And what's that based on?

A. It's based on a couple of things. There's a piece of code that starts that process, the guy who goes through and looks to flip that flag, if you will. And the -- that piece of code actually contains embedded within it information about when that change was instigated, you know, the date that it was running -- that it began running that, because it runs like a -- it runs for 100,000 records at a time. So this little control file says how often it runs and when it started running and how many records it processes on a whack, basically.

Q. And what else?

A. Well, I also talked to the developer, Mr. Boswell, who wrote that code and to Mr. Steele as well at Rightscorp to understand whether that date -- that information that was in the scheduling file reflected the point in time when Rightscorp began to -- to run this code for the first time. And he explained to me that it did. And I -- you know, I asked, are you sure, and, again, he explained to me that he was confident of that date.

MR. BUCKLEY: Your Honor, that's all hearsay.

THE COURT: Yeah, sustained.
BY MR. CARACAPPA:
Q. Okay. We talked about the 10 percent. Have you prepared a demonstrative to reflect how that actually works?
A. Yes, I did.
Q. Okay. Can you step the jury through that demonstrative, please?
A. Sure. So in this instance, which is similar to the one I showed you for the individual -- for the sampling that was taking place during the relevant time period, what you see is that every time the Rightscorp system goes out to a peer and gets that handshake, as long as the peer has at least 10 percent of the payload that's requested, it creates that record. And so in this case on this example it would have created five records. One for peer 2, 3, 4, 5, and 6.
Q. So after the relevant time period, Rightscorp would send notices if the Cox subscriber was making available less than a hundred percent of the entire torrent payload. Right?
A. Right. Because what happens is when that record is written to the database, the flag is set as it always was for a hundred percent. But then this little program comes through and switches the flag, so now all of those records would get notices.
Q. Are any of these notices considered in the 1.8 million notices that were sent to Cox during the relevant time period?

A. No.
Q. Do you think it's fair that Rightscorp would send notices to Cox if only 10 percent of the payload was available?
MR. BUCKLEY: Leading, argumentative.
THE COURT: Yeah, I'm going to sustain the objection. I also don't understand the relevance unless you want to tell me why it's relevant. It's outside the period that we're talking about, and also it's her opinion. I don't know whether it's been the subject of her expert report or -- you want to rephrase it and try again? I'll -- I'll -- or you can -- I'll listen to that.
Next question.
BY MR. CARACAPPA:
Q. You alluded to this earlier and I just want to clarify it. You said that Rightscorp changed this code in response to something that was going on in the BitTorrent community. Do you recall that?
A. Yes, I do.
Q. And what was it responding to?
MR. BUCKLEY: Foundation, speculation.
THE COURT: Yeah, I think you did lay the foundation, but just repeat it one more time. I mean, she was allowed to testify about all this ten minutes ago. So I think that there was foundation, but if you could ask a foundation question, that would help.

BY MR. CARACAPPA:

Q. Ms. Frederiksen-Cross, you're familiar with BitTorrent?

A. I am, yes.

Q. And you're familiar with how it works?

A. I am, yes.

THE COURT: We don't need to go back that far.

(LAUGHTER.)

BY MR. CARACAPPA:

Q. And you're familiar with the Rightscorp code?

A. Yes.

Q. All right.

You testified earlier that in response to changes that occurred in the BitTorrent community there was a change that Rightscorp made. Is that right?

MR. BUCKLEY: Same objection.

THE WITNESS: That's correct.

THE COURT: Overruled.

Go ahead.

BY MR. CARACAPPA:

Q. Why was that change made?

A. Within the BitTorrent file sharing community, there's always been a concern that ISPs or other entities, government entities, whoever, would try to interfere with the sharing of files. And so from time to time there have been changes in that community with respect to the software, the BitTorrent

client software that a user uses or with respect to how the trackers work or even some changes in the protocol. It's evolved over time. There's public specs for that that you can go and look at, you know, later, after this case, if you're interested.

The -- one of the changes that happened was that there was a perception that some ISPs were detecting BitTorrent traffic using the handshake that's exchanged, because that's recognizable when you look at the traffic between two computers, and were cutting back on the bandwidth that they allocated seeders to prevent their network from becoming overused by people who were file sharing. And so in order to defeat that kind of detection and throttling, it's called, where the bandwidth gets cut back, the BitTorrent community responded by creating some clients that were able to do what's called lazy bit field.

And lazy bit field just means that I'm not going to report to you everything that I have on my handshake. You know, I may have 100 percent or 90 percent or 80 percent, but maybe I'm only going to report 10 percent or 15 percent, enough to initiate the conversation. But then the -- when the client send requests for specific pieces back and forth, they can still respond and deliver everything it has, but it's harder to detect that a particular computer has got the whole work and is sharing the whole work.

And so in response to that, Rightscorp made some changes. The -- this little program that changed the flag whether or not something would receive a notice to lower the threshold from you have to have 100 percent of payload to you have to have 10 percent of payload, in order to try to continue to detect and report on file sharing activity that might have otherwise been obscured by this change in the BitTorrent client.

Q. Thank you, Ms. Frederiksen-Cross.

Mr. Rucinski also talked about some of the samples on the hard drive. Do you recall that?

A. I do, yes.

Q. Okay. And what is your recollection of that testimony or as it's set forth in Mr. Rucinski's expert report?

A. He basically identified when he went out and looked at the sample files of music that had been downloaded from specific peers. And he was provided, as I was, a hard disk that had quite a large number of these sample files on them.

And he went out and looked at it and he said, there's a problem with some of these. Some of these files are misnamed. The sample that was downloaded or the sample that was present on that disk might have the name of a song, but it actually wasn't the song. It might be something like an article -- I think you were shown one of those during opening arguments, that had been named as a song, but it was about the

contents or about the performer, or some of them might be something like the album cover picture. And so he identified roughly about 800 such instances after he reviewed that file of downloads.

Q. Does it surprise you that the Rightscorp system is not accurate 100 percent of the time?

A. It does not.

Q. Why not?

A. In part because the system is dependent on data that might be entered. In this case that particular error was traced to some data that was entered manually. That is to say, during the early phases when individuals who were verifying music and entering the title of the music, they might not enter the entire title just exactly as it appeared in the torrent descriptor file. So when the system went out and tried to sample or went back to try to sample for that file, because it wasn't using the exact file name, it might pick up or it would default to the first file that was in the payload rather than the proper file because it couldn't match the names.

And the reason that I feel that it's not a huge issue with respect to accuracy is that when I look at the total number of samples that are relevant in our time period of interest and I look at the percentages of those samples that have any problem, the accuracy rate is still well over 99 percent. And so the system may not be perfect, but that's a

really a very reasonable accuracy rate in my opinion. And so I find the data overall to be accurate.

Q. Do you have an understanding as to whether the Rightscorp code has changed at all during the relevant time period?

A. There have been some changes, yes.

Q. Can you explain those changes, please?

A. Certainly. Let's kind of start at the beginning of the process.

Some of the things that used to be done manually, like typing in titles, are now done in a more automated fashion. You know, copying them from one file into the database, for instance. Some of the processes, like downloading torrents, torrent files, and downloading the associated payload for those torrents used to be done manually and now it's done using automation.

Some of the steps, like verifying that a particular torrent has the material you think it has, used to be done by listening to the songs in the torrent, and now they use the technology of products like Audible Magic and AcoustID to verify the contents as what the expected content is. And so there have been changes to improve or to replace manual processes, particularly with respect to this ingestion and verification of the torrent and the torrent payload.

The essential portions of the sampling logic, the part that goes out and does the handshake with the peer to see

if it's offering the work or the part that downloads a particular file from the peer has not changed very much at all. Those have essentially been the same throughout.

The -- well, actually, let me clarify that. The process to download samples from a peer didn't exist in the very, very early days. But since it's been implemented, it appears not to have changed at all, or with very minor changes. Just changes related to the names of some databases and some of the -- when -- back up.

When they automated the ingestion of torrents and torrent payload, they had to add an extra set of databases because now they had a bunch of torrents and they really were only interested in the ones that had payload. So now it looks at the later database instead of the former one.

MR. BUCKLEY: Is there a question pending?

THE COURT: Yeah, ask your next question.

And listen to the question and just respond to the question, please.

BY MR. CARACAPPA:

Q. Ms. Frederiksen-Cross, let's talk for a minute about revision control. Do you understand that term?

A. Yes, I do.

Q. And what is revision control?

A. Revision control is software that's used to keep track of changes to a document or a program. So just like you might use

track changes in a Word document for a single document, a revision control system keeps track of changes but across multiple documents or multiple programs.

Q. And does Rightscorp use revision control?

A. To the best of my knowledge, they do not, unless they've implemented it very recently.

Q. Did Rightscorp use revision control during the relevant time period?

A. No.

Q. Why not?

A. Oh.

MR. BUCKLEY: Calls for speculation, foundation.

THE COURT: Yeah, lay a foundation.

BY MR. CARACAPPA:

Q. Do you have an understanding from Rightscorp as to why they didn't use revision control during the relevant time period?

MR. BUCKLEY: Hearsay.

THE COURT: Overruled.

THE WITNESS: My understanding based on --

THE COURT: Hold on one second.

So she can testify that she talked to different people, and based on that her opinion is X, Y, or Z. If she's going to actually say what someone else told her, then that's subject to our ruling this morning about whether there's going

to be a witness who actually testifies to that later on in the case.

MR. CARACAPPA: There will be a Rightscorp witness later in the case to testify on exactly this issue.

THE COURT: Okay. All right. Then it's -- we'll permit it based on our earlier conversations this morning.

Thank you. Go ahead.

MR. CARACAPPA: Thank you, Your Honor.

BY MR. CARACAPPA:

Q. So just to be clear, you had conversations with Rightscorp about why they didn't use revision control. Correct?

A. That's true, yes.

Q. And based on those conversations, why didn't Rightscorp use revision control?

A. It's my understanding that they felt it wasn't necessary in their environment in part due to the complexity of the environment and the overhead that it would require to maintain their code in that way. And that they -- because it's a very small environment, they're really one primary programmer. And only two people involved with the development of the code, they felt that their communication was sufficiently close that they wouldn't need it to keep each other informed of their changes.

MR. CARACAPPA: I'm not sure if this is a question you said I couldn't ask, so --

THE COURT: Yeah. Ask the question, but don't answer

it until we get a response.

MR. CARACAPPA: Thank you, Your Honor.

THE COURT: Yes, sir.

BY MR. CARACAPPA:

Q. Do you have an opinion regarding whether that decision was reasonable?

A. I do.

Q. And what is that opinion?

THE COURT: You may answer. Thank you.

THE WITNESS: Well, my opinion is that their decision was made on their own business needs and on its face reasonable, given that the use or not use of revision control is not something required for developing software. Your decision of whether or not to use it is based on whether or not you feel you need it.

BY MR. CARACAPPA:

Q. If Rightscorp had asked you whether they should use revision control, what would you tell them?

A. I believe it's a helpful tool for development. And had I been asked, I would have suggested that they use revision control or alternatively, depending on the factors of their environment, some similar process to keep track of changes.

Q. Have you been involved in cases over your career where companies that you've worked with don't use revision control?

A. I have been involved in many such cases, yes.

Q. All right. Thank you.

We talked about the Rightscorp system. And you testified earlier that one of the things you did was you actually tested the Rightscorp system. Is that right?

A. That is correct, yes.

Q. And have you prepared some demonstratives to help explain that test?

A. I have, yes.

Q. Would you mind stepping the jury through those demonstratives, please, and explaining the testing that you did?

A. Certainly, if we could pull the first one up.

What I did in my testing -- just to give you sort of the overview of the testing --

Q. I'm sorry, Ms. Frederiksen-Cross. Can you speak a little bit louder and into the mike?

A. What I did in my testing to provide an overview of that testing -- just before I describe the details -- and I set up a computer that had the BitTorrent client on it and I downloaded some torrent files that were torrent files that indicated that they had some of the protected works that Rightscorp was hired to protect. And I ran that -- I loaded those torrent files then into my BitTorrent client, and I ran BitTorrent so that I could collect copies of those works. And, you know, I left it open so that I could share copies of those works. This was

with BMG's permission, of course.

And in addition to the normal BitTorrent, I just download -- or just had on the computer one that was available on the Internet. In addition to that software, I put some special software on that computer that would let me actually capture at a very detailed level the traffic that went on between my computer and other computers on the Internet. It's a product called Packet Sniffer. I used a product called WireShark.

And all it does is it just records every communication going in and out of the computer, and then it gives me a nice little interface that I can use to filter and search for things so I can look for handshakes or I can look for requests for pieces or exchanges of pieces. It just lets me burrow down into that data and find out what's really going on under the covers.

Q. All right. Can you please describe what's on the screen now at page 82 of PDX 1?

A. This is the list of the songs taken from the copyright list that I was provided of the works at issue in this case that I just randomly selected to use in my testing.

Q. And here we have the PA number. What's that, do you know?

A. My understanding is that that's a copyright filing number related to a particular song or work.

Q. Okay. And we have the title, which would be the title of

the work?
A. Correct.
Q. The song code. What's the song code?
A. That's a code that I understand Rightscorp and their clients use internally in some cases to make sure they're talking about the same song.
Q. And the artist, that's who performs the work?
A. That's correct.
Q. And what about the file name of the infringement notice? What's that?
A. That was something that was added here to make sure that the songs I was selecting were related to some, you know, past infringement notice.
Q. Okay. Slide 83 is a screen shot. Is that right?
A. It is. The lower half is the screen shot and the upper half is a separate screen shot.
Q. Okay. Can you please describe what's depicted at slide 83?
A. Yes. The upper half shows a particular IP address range and information about who that IP range had been assigned to, along with the -- the registration date and when the record for that particular registration was last updated. So this shows that a range of 70.170.0.0 through 70.170.127.255 was assigned to Cox Communications.
Q. So anyone who has an IP address in that range and is

making available a work for upload or download would be a Cox customer. Right?

MR. BUCKLEY: Objection. Leading, foundation, argumentative.

THE COURT: It is leading. And lay the foundation. And I know she's testified previously that a range of IP addresses are dedicated to each ISP, but make that clear first, please.

MR. CARACAPPA: I will, Your Honor. Thank you.

BY MR. CARACAPPA:

Q. You talked earlier about ARIN, or A-R-I-N. Is that right?

A. That's correct, the American Registry of Internet Numbers.

Q. And what is that?

A. That's an administrative group that can provide you the ability to look up who any particular range of IP addresses assigned to a U.S. provider has been assigned to. And the range information here with respect to registration relates to the ARIN assignment of that block of numbers to Cox Communications.

Now, Cox can have more than one block. Let me just be really clear. It's not necessary that a subscriber only have one block. But this particular block, as shown here, was assigned to Cox.

Q. So if I had an IP address and I wanted to know what ISP was assigned that IP address, where would I go?

A. You could go to ARIN or who is or one of the other public facilities and look up the IP address, and what gets returned to you is information about who's registered to administer that IP.
Q. So in this case, if I go to ARIN and type in IP address 70.170.0.0, who would it say is assigned that IP address?
A. It would come back and say that Cox Communications was assigned that IP address.
Q. Thank you.

Could you continue with your description of this.
A. Sure. And the reason that I'm showing this registration at the top is if we can scroll to the bottom half of my screen now.

What I have captured here is the back and forth communication between a computer I was using and a computer that had an IP address that indicates it was being used by -- or that was assigned to a Cox subscriber account. And I filtered this mass of communication down by just selecting a particular exchange between my computer and one other computer.

So my computer, the one that I'm using from a JLI address is the one that in the very first row is indicated with the source of 192.168.1.101. That's a JLI address.

The destination computer that I'm talking to in this particular conversation is 70.170.185.59, which is in that range we just saw as belonging to or administered by Cox.

And what this particular piece of exchange shows is my computer. And, again, this was not something I set out to find a Cox person or anything. I was just running my test. But in that test data I captured, my computer reached out to a peer that happened to be assigned to a Cox address and it offered a handshake. And then in the second line you can see that now the source is that Cox administered IP responding to my handshake with its own handshake, so we're completing that handshake that I talked about.

And then the next couple of lines are some exchange that we have between my computer and that Cox computer that are just kind of setting up the protocol that were going to be used for communication.

Below that, then, if you go down, for instance, to the line that starts with line number 10, you see that there's -- over on the right-hand side under info you see that there's a request for a piece. And what -- and that is my computer requesting that piece from the Cox subscriber's computer. And then below that you see the response to that piece where that Cox subscriber is passing information, the piece of that payload back to me.

And so this is a portion of a conversation that I had with that Cox subscriber during the time that I was running BitTorrent testing where that Cox subscriber is responding to my request for content that is part of a payload that has

protected works in it, and they're sending me pieces of that payload.

Q. Ms. Frederiksen-Cross, you used an interesting word. You said "conversation". You really didn't actually talk to the subscriber. Right?

A. Well, that's the technical term used when two computers talk to each other. I didn't talk to the subscriber. My computer talked to their computer and their computer talked to my computer.

Q. So this is a record of the digital conversation that your computer had with the Cox subscriber?

A. Yes. Thank you for that clarification.

Q. Okay. Thank you.

Ms. Frederiksen-Cross, in conducting this test, what ISP did you use?

A. This particular test was conducted from JLI's primary ISP, who is Comcast.

Q. And why didn't you use Cox?

A. Cox doesn't serve the Oregon area where our offices are, and so I used the ISP that we had. Because, again, this testing was primarily focused on looking at the exchange of information that happens with BitTorrent. And then subsequently I requested data about this exchange from Rightscorp to see what they had captured reflecting this exchange.

Q. And just to be clear, this Cox subscriber, then, is not just making this work available to other people on the Cox network, but it's anyone on the Internet. Right?
A. Yeah, that's the way BitTorrent works. It's not limited to a particular ISP or even a particular country.
Q. Ms. Frederiksen-Cross, did -- strike that.

Was Rightscorp able to accurately detect your use of BitTorrent?
A. They were, yes.
Q. Okay. Could you please explain?
A. Well, after I ran these tests for a few days using a couple different IP addresses, I contacted Rightscorp and I said, would you give me the data you collected for the following IP addresses in these time frames. And so Rightscorp provided me back a file that was taken from their databases of data they had captured during that time period specifically related to the IP addresses I asked for, and sure enough I saw my communications in there.

And I also asked them then if they had created any infringement notices that might have been sent to Comcast, could they, you know -- or any notices of my activity that had been sent to Comcast. And they said, yes, they had generated some notices about my activity that were sent to Comcast.

So I asked them to send me a copy of those notices, so they sent me a copy of the notices. And I looked at things

like that the titles -- you know, the song titles and works that were identified and the torrent payloads that were identified in those notices to make sure that they matched up with what I had been doing and confirmed that they did.

Q. Okay. Thank you.

Ms. Frederiksen-Cross, what is depicted at Slide 84?

A. This is a very similar exchange again between my computer, 192.168.1.90 in this case, and --

Q. I'm sorry to keep interrupting you and asking this, but can you just please make sure you speak into the microphone?

A. Yeah. Let me turn it around a little so I can use it while I see here.

Okay. So this is a communication again between my computer and a computer whose IP address is in one of the ranges that Cox administers. And so on the left-hand side here we have, again, the record showing that that IP address is assigned to Cox to administer.

And what's different about this communication from the previous one is in this one the Cox IP address is initiating the handshake with me. In other words, the Cox IP address is asking my computer now to share files. In the previous one I was reaching out to somebody else to share. Now they're reaching out to me to share.

And so this captures a correspondence between my computer and that computer, a conversation where they asked are

you -- have you got this payload for BitTorrent. I respond, yes. And then they begin to ask me -- after the little plumbing bit at the beginning, they begin to ask me for pieces and I respond by sending pieces.

And again, I did not start out this test focused on only Cox IP addresses. This is just content that I captured in my testing of BitTorrent.

Q. Okay.

MR. CARACAPPA: Your Honor, I probably have about 15 to 20 minutes left. What time do we normally break for --

THE COURT: About 15, 20 minutes, so between quarter to 1:00 and 1:00.

MR. CARACAPPA: Okay.

THE COURT: So let's go -- let's finish the questions you know you have, and I'll let you review your notes and ask a couple of additional questions if necessary after our lunch break.

MR. CARACAPPA: That's great. Thank you, Your Honor.

THE COURT: All right.

BY MR. CARACAPPA:

Q. Okay. We talked about BitTorrent, we talked about the Rightscorp system, we talked about the test that you performed. I would like to talk for a little bit about Cox. Okay?

A. Okay.

Q. Cox has a system that it calls CATS. Is that right?

A. That's correct.
Q. Okay. Do you have an understanding as to how CATS works?
A. Based on review of the source code, yes.
Q. Okay. Can you describe for the jury what you did in reviewing the CATS source code?
A. I started by reviewing CATS' policies just to understand generally the shape of what the code I was looking at would be doing. And then I reviewed -- actually Cox policies, just to be clear, for automated handling. And then I reviewed the code called the CATS system that does that automated handling of e-mailed complaints.
Q. Do you know approximately how many lines of CATS source code there were that you reviewed?
A. I do not recall off the top of my head. It was a fairly large number of files. I don't recall the number of lines.
Q. We talked a little bit about the term "blacklist". Is that right?
MR. BUCKLEY: Objection. Foundation.
THE COURT: I don't recall that testimony, so ask the foundational questions, please.
MR. CARACAPPA: Yes, sir.
BY MR. CARACAPPA:
Q. Do you have an understanding as to the term "blacklist"?
A. As it applies here, yes.
Q. And what is that understanding based upon?

A. It's based upon reviewing Cox policies and also the Cox source code.
Q. Okay. What does that term mean, as Cox uses that term?
A. As used in this context --
MR. BUCKLEY: Objection. Requires speculation.
THE COURT: Overruled.
THE WITNESS: As used in this context, the term blacklist is used for a data structure that contains e-mail addresses from whom Cox will not accept e-mail. So if you're on the blacklist, they're not going to process your e-mails, your complaint e-mails.
BY MR. CARACAPPA:
Q. Is Rightscorp on that blacklist?
A. Yes, it is.
Q. And what does the CATS system do to notices received from companies that are blacklisted?
A. When the Cox automated system goes out to the e-mail server and pulls in an e-mail, it checks to see if that e-mail is blacklisted based on the sender ID. And if it is, Cox deletes the e-mail and doesn't process further in their automated system.
Q. So does Cox receive that e-mail?
A. It comes into their server, yes, and then the system reads it off the server and decides that it's blacklisted and disposes of it.

Q. How does CATS work for notices received from companies that are not blacklisted?
A. Well, the notices are then processed by pulling in the body of the letter. And once the CATS system has both the header, you know, the to/from information and the body of the letter, it creates a -- a complaint record that reflects that particular e-mail. It's associated just with that e-mail.

What happens next then is some evalu -- actually, let me back up a little bit. It complete -- it creates the record related to that e-mail, but it also does some other testing to determine whether or not that e-mail will be processed further.
Q. And can you describe that testing, please?
A. Yeah. It checks things, for instance, like whether the complainant, the person sending the e-mail, has exceeded a threshold, an allocation. The default is 200, but some complainants have a higher limits that they're allowed.
Q. Okay. I'm going to stop you right there.

What does that mean that there's a threshold of 200?

MR. BUCKLEY: Relevance.

THE COURT: Overruled.

THE WITNESS: That means that for Joe Q complainer, had their e-mail been processed, it will process the first 200 that occur in a 24-hour period. It's just a rolling 24-hour window. And once it hits 200 within a 24-hour period, it sets a flag in that e-mail that prevents it from being processed

further. So this actually happens before the complaint record is -- is created.

So it's just saying, you know, you've hit your cap. I'm not going to process the rest of these today. Now, it doesn't delete it at that point, but it can't be -- the flag causes the e-mail not to be processed again for at least 24 hours.

BY MR. CARACAPPA:

Q. Are there any other flags that place limits on the notices that Cox is willing to process?

A. Well, there are other checks, not so much flags as checks.

Q. And what other checks are there?

A. Well, for instance, the Cox system generally will allow only one complaint per subscriber ID per complainant per day. So if they had received five complaints about a particular subscriber from a particular complainant on a particular day, they would pass the first one through their filter, but the other four would not be processed.

Q. What if that subscriber was making available an entire discography from The Rolling Stones? How many notices would it get?

MR. BUCKLEY: Objection. Leading, calls for speculation.

THE COURT: Overruled.

THE WITNESS: Based on what I have seen in the code,

they would still from that single complainant receive only one notice for that -- that day.

BY MR. CARACAPPA:

Q. Do you have any idea how many songs there are in The Rolling Stones discography?

A. I have not attempted to count that.

Q. Probably more than one?

A. Oh, yeah.

THE COURT: She answered the question.

Go ahead.

MR. CARACAPPA: Thank you, Your Honor.

BY MR. CARACAPPA:

Q. We talked earlier about the number of notices that Rightscorp sends to Cox. Right?

A. Yes, we've spoken on that.

Q. And we talked a little bit about this, and I said I would come back to it.

Does the CATS system allow for the automated processing of notices?

A. A substantial portion of them, yes. Some are kicked out for manual processing. For instance, if the notice is malformed in some way, it might be referred to a human rather than being processed automatically.

Q. And does the Rightscorp notice contain information that allows the CATS system to automatically process the notice?

A. Yes, it does.
Q. Okay. If you can please look at Slide 89. The Rightscorp notice contains a heading. It says, ACNS Header. Is that right?
A. That's correct. The ACNS data occurs at the end of the e-mail notice.
Q. And what is that?
A. ACNS is an industry agreed-upon standard for the exchange of information relating to automated notices that can be e-mailed for copyright complaints. And the -- the format looks a little odd to us, but if you look at it, you'll see that after each sharp bracket there's something that looks like a title, like this is a phone or an e-mail ID or an IP address.

And then following that is data that represents the data for that value. It's called a key value pair in programmer lingo. But it just basically means here's something you can look for, for instance, IP address, and then immediately following that in a formatted fashion is the value that is associated with IP address. So it's a very computer-friendly type of encoding that makes it very, very easy to parse this kind of information out of an e-mail, or to write a program to parse this information.
Q. Do you know why Rightscorp was blacklisted?

MR. BUCKLEY: Objection. Speculation, foundation.

THE COURT: Sustained.

BY MR. CARACAPPA:
Q. Can the CATS system process the Rightscorp notice without forwarding the notice to its subscribers?
A. I'm sorry. Can you ask that again?
Q. Can the CATS system, the Cox system, process the Rightscorp notice without forwarding it to the Cox subscribers?
A. Well, the only processing it does is to delete it. So depending what you're asking with processing, it deletes it.
Q. Okay. That's a fair point.

If Rightscorp were not blacklisted, could the Cox CATS system process the notice without forwarding the notice to its subscribers?
A. The system as it now stands -- if they wanted to suppress forwarding the notice, there's a flag they would have to turn on in the processing. So they would have to add, like, if sender is Rightscorp, don't forward the body of the notice.
Q. A flag that they'd have to turn on?
A. Yeah, they would have to add basically a couple of statements to their software.
Q. And in your experience, how much work would it take to turn that flag on?
A. It's a trivial amount of work. The software is already designed to say whether or not -- there's a logic value of flag that says whether or not to forward the body of a notice. And so what they would have to do to use that in the case of the

Rightscorp system is they would have to add something to turn that flag, set it to the appropriate value if it was a Rightscorp notice being processed.

Q. Thank you.

MR. CARACAPPA: If now is a good time for lunch, I may have a couple of minutes of follow up after lunch after reviewing my notes and can move in some exhibits.

THE COURT: Okay.

We're going to break for lunch now and continue our testimony when you-all return. Let's come back at 20 minutes to 2:00 and we'll -- actually, I've got people coming in to sign some orders at 1:40, so let's make it 1:45. We'll come back and we'll resume the testimony. All right?

Enjoy your lunch. You're excused. Thank you.

NOTE: At this point the jury leaves the courtroom; whereupon the case continues as follows:

JURY OUT

THE COURT: All right. Anything we need to talk about now?

MR. CARACAPPA: I don't think so. I'm going to just go over my list. There may be some exhibits that we can move in later, but --

THE COURT: Okay. All right. Then we'll see you at 1:45. We're in recess.

Ms. Frederiksen-Cross, of course, you're in the

middle of your testimony, so don't discuss the testimony you've given so far. All right.

THE WITNESS: Yes.

THE COURT: Thank you.

We certify that the foregoing is a true and accurate transcription of our stenographic notes.

/s/ Norman B. Linnell
Norman B. Linnell, RPR, CM, VCE, FCRR

/s/ Julie A. Goodwin
Julie A Goodwin, CSR, RPR